

## Dyslipidemia in Pregnant Women with Pre-Eclampsia

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### ABSTRACT

**Aim:** To compare mean lipids profile in pregnant women having pre-eclampsia with those having normal pregnancy.

**Methods:** A total number of 80 pregnant females were included in this study. There were 40 females who were having pre-eclampsia and 40 females who were having normal pregnancy without any complications. Venous blood samples were taken 12 hours fasting and were sent to the central laboratory for determination of lipid profile. Serum lipid profile between the patients of pre-eclampsia and normal pregnancy was compared using independent sample t-test.

**Results:** Mean age of patients in this study was 25.7±4.56 years; 24.3±3.65 years in patients with normal pregnancy versus 26.2±2.34 years in pre-eclampsia patients. Mean BMI was high in pre-eclampsia patients 28.2±5.34 Kg/m<sup>2</sup> as compared to 25.21±8.11 Kg/m<sup>2</sup> in normal group (p-value 0.03). Lipid profile was significantly high in pre-eclampsia patients as compared to control. All lipid parameters such as T. cholesterol, HDL-C, LDL-C, VLDL-C and triglycerides levels were high in pre-eclampsia patients with significant statistical differences.

**Conclusion:** Lipid abnormality is very common in pre-eclampsia patients and these patients have higher lipid levels. So routine evaluation of lipid parameters can help to predict eclampsia at early levels or to detect patients who are at risk of pre-eclampsia or eclampsia.

**Keywords:** Lipid profile, pre-eclampsia, eclampsia.

### INTRODUCTION

Preeclampsia is a condition of hypertension and proteinuria (BP≥140/90 and proteinuria >300 mg/24h in urine dipstick) which occurs in pregnant women after the 20 weeks of gestation period<sup>1</sup>. Around the world, 5-8% of pregnant suffer with this specific disease, it causes the maternal and fetal morbidity to mortality.<sup>2</sup> In mother, without treatment, it may produce epileptic convulsion, in such condition, need to perform emergency caesarian section<sup>3</sup>. Apart from this, there is risk of seizures (eclampsia), stroke, edema and death<sup>3</sup>. Preeclampsia cause IUGR leading low birth weight babies, these babies suffer from diabetes mellitus, hypertension and cardiac diseases in their life span<sup>4</sup>. Those patients having family history of preeclampsia and chronic hypertension may have high chance of prone to preeclampsia. the cause of pre-eclampsia still unclear and there are no specific tests to clinically identify<sup>5</sup>.

Early pregnancy dyslipidemia is higher risk of Pre-eclampsia. In normal pregnancy, due to the less intestinal motility the LDL and HDL levels get 50% increase, fatty acids and TGL get increase three times than normal.<sup>6</sup> Elevated level of cholesterol excretion in bile cause to alteration in lipid profile. Hyperestrogenemia is common in normal pregnancy, which causes decreasing of LDL level and elevated level of HDL and TGL<sup>7,8</sup>. Due to the LDL oxidation, lipid mediated endothelial dysfunction occurs. Increased level of triglycerides prone to atherogenesis, which leads to increase in small dense LDL. These elevated level of triglycerides may cause cardiovascular disease in future. Increase in free fatty acid and insulin resistance are common associates in preeclampsia<sup>9,10</sup>.

Early identification of hypertension in pregnancy may help in preventing the complications of preeclampsia. This study aims to compare mean lipids profile in pregnant

women having pre-eclampsia with those having normal pregnancy.

### METHODS

The study was conducted in Gyanae & Obstetrics Department of Multan Medical & Dental College & Ibne-Siena Hospital Multan from September 2017 to January 2018. A total number of 80 pregnant females were included in this study. There were 40 females who were having pre-eclampsia and 40 females who were having normal pregnancy without any complications. Patients having systolic blood pressure (SBP) ≥140 mmHg and diastolic BP ≥90 mmHg or rise of SBP of 30 mmHg or DBP of 15 mmHg on two separate readings 06 hours interval were labelled as having pre-eclampsia.<sup>11</sup> Patients who were morbidly obese or who had other risk factors of hypertension were excluded. All patients were asked to sign a consent before inclusion in study.

Venous blood samples were taken 12 hours fasting and were to the central laboratory for determination of lipid profile. For data compilation and analysis, we used SPSS v23 software. Serum lipid profile between the patients of pre-eclampsia and normal pregnancy was compared using independent sample t-test.

### RESULTS

Mean age of patients in this study was 25.7±4.56 years; 24.3±3.65 years in patients with normal pregnancy versus 26.2±2.34 years in pre-eclampsia patients with insignificant difference. Mean BMI was high in pre-eclampsia patients 28.2±5.34 Kg/m<sup>2</sup> as compared to 25.21±8.11 Kg/m<sup>2</sup> in normal group (p-value 0.03). parity was >2 in 8(20%) patients with normal pregnancy versus 11 (27.5%) patients in pre-eclampsia group (p-value 0.43).

Lipid profile was significantly high in pre-eclampsia patients as compared to control. All lipid parameters such as T. cholesterol, HDL-C, LDL-C, VLDL-C and triglycerides levels were high in pre-eclampsia patients with significant p-values (Table 1).

Table 1: Comparison of Lipid Profile

	Control Group	Pre-eclampsia Group	P-value
Total Cholesterol	134.5±9.8	162.8±24.8	<0.001
HDL-C	39.1±2.01	37.8±2.43	0.01
LDL-C	70.8±7.89	85.9±25.9	<0.001
VLDL-C	25.3±2.80	42.8±8.9	<0.001
Triglycerides	128.9±17.9	209.5±40.8	<0.001

## DISCUSSION

Pre-eclampsia is reported to be associated with high morbidity and mortality not only the mother but the fetus as well. Ultimate management strategy of pre-eclampsia is to naturalize pregnancy complications such as to avoid pre-term birth, and to achieve survival of mother and the neonate.<sup>12</sup>In this analysis a straightforward screening was explored to diminish the inconveniences identified with preeclampsia, recognition of serum lipid profile in early pregnancy diminishes the danger of preeclampsia. After estimation of Serum lipids, they were looked at among preeclampsia and normal pregnant ladies. A sum of 80 cases was researched, all were in the third trimester.

Dyslipidemia in pre-eclampsia patients is a result of hormonal imbalance such as hypo-estrogenemia in these patients. Reduction in placental blood flow is considered to be the main contributor in the development of pre-eclampsia. Blood flow reduction results in impaired synthesis of Dehydro-epi-androsteronesulphate (DHEA) from adrenal glands of fetus, DHEA is an important source of estrogen in pregnancy and about 90% of it is achieved from DHEA of fetus<sup>13,14</sup>. Studies have also shown that increased lipid profile is a significant contributor of increased LDL concentration. The elevated triglyceride levels increase hepatic lipase activity that in turn increase LDL concentration by converting TGL into LDL<sup>15,16</sup>.

In present study, we found significantly lower levels of lipid parameters in control group females as compared to the pre-eclampsia patients. A study conducted by Annuradha et al. found T. cholesterol levels of 160.9±27.9 mg/dl in pre-eclampsia versus 136.85±10.44 mg/dl in controls, HDL-C levels 38.57±2.03 mg/dl in pre-eclampsia versus 39±1.49 mg/dl in controls, LDL-C levels 84.5±28.7 mg/dl versus 72.75±9.62 mg/dl in controls, VLDL-C levels 41.95±8.63 mg/dl in pre-eclampsia versus 24.7±3.05 mg/dl in controls and TGL levels 210.32±42.65 mg/dl in pre-eclampsia and normal pregnancy was 126.85±16.68 mg/dl<sup>17</sup>

Another study conducted by Aziz et al. also reported similar results, they reported mean LDL-C levels of 39.75±11.99 mg/dl in pre-eclampsia versus 51.18±06.09 mg/dl in control group in control group. T. cholesterol levels of 177.5±57.19 mg/dl in pre-eclampsia versus 183.5±12.88 mg/dl in controls, total lipids 806.12 ± 243.11 mg/dl in pre-eclampsia versus 574.93±47.55 mg/dl in controls, LDL-C

levels 117.93±12.56 mg/dl in pre-eclampsia versus 108.43±06.60 mg/dl in controls with insignificant p-values. They authors did not reported any significant association of pre-eclampsia with serum lipid profile levels<sup>18</sup>.

## CONCLUSION

Lipid abnormality is very common in pre-eclampsia patients and these patients have higher lipid levels. So routine evaluation of lipid parameters can help to predict eclampsia at early levels or to detect patients who are at risk of pre-eclampsia or eclampsia.

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