A Study on Maternal Serum Triglycerides Level in Women with Pre-Eclampsia

Abdullah Zaka*, Muhammad Nouman Akbar, Muhammad Saqib Bashir, Mahnoor Arshad
Department of Medical Sciences, Allied Hospital, Faisalabad, Pakistan

ABSTRACT

Introduction: Preeclampsia is a potentially devastating disease of pregnancy that complicates 2%–8% of all pregnancies in the United States and can threaten the life of both the mother and her unborn child. Manifesting after 20 weeks of gestation, preeclampsia is a multi-organ disorder defined as de novo hypertension. Objectives of the study: The main objective study is to analyses the maternal serum triglycerides levels in women with pre-eclampsia. Methodology of the study: This study was conducted at Allied Hospital, Faisalabad during 2019 to 2020. The data were collected from 100 pregnant females. According to the criteria for the definition of pre-eclampsia given by the International Society for the Study of Hypertension in Pregnancy. Peripheral fasting blood specimens were collected from all control and preeclamptic subjects. Blood was always collected before onset of labor. Serum was separated for analysis. Triglycerides were determined after enzymatic hydrolysis with lipases. The indicator was a quinonimine formed from hydrogen peroxide, 4-aminop- henazone and 4-cholorophenol under the under the catalytic influence of peroxidase.

Results: The age of the studied pregnant females ranged between 16 and 42 years. The mean age of cases (pre-eclamptic) and controls (normal) pregnant women was 29.6 (6.1) and 29.5 (6.1) years respectively. There was no statistically significant difference in the maternal ages of both groups. Body mass index, which was only recorded at the time of blood sampling was not significantly different. Mean systolic and diastolic blood pressures were significantly higher in pre-eclamptic group than in the normal pregnant groups.

Conclusion: It is concluded that the women who developed pre-eclampsia had disturbed lipid profile due to abnormal lipid metabolism. Increased triglycerides levels and delayed triglycerides clearance and high blood pressure are the reasons for the development of pre-eclampsia.

Key words: Recurrent implantation failure, IL-1; IL-10, Interferon, Thin endometrium

Correspondence: Abdullah Zaka, Department of Medical Sciences, Allied Hospital, Faisalabad, Pakistan, E-mail: abdullahzaka123@gmail.com

INTRODUCTION

Preeclampsia is a potentially devastating disease of pregnancy that complicates 2%–8% of all pregnancies in the United States and can threaten the life of both the mother and her unborn child. Manifesting after 20 weeks of gestation, preeclampsia is a multi-organ disorder defined as de novo hypertension (systolic blood pressure ≥ 140 mm Hg; diastolic blood pressure ≥ 90 mm Hg) combined with proteinuria (≥ 300 mg/24 hours), as defined by the American Congress of Obstetricians and Gynecologists (Hubel CA, 1999). Without intervention, the mother is at substantial risk for seizures (eclampsia), renal and liver failure, pulmonary edema, stroke, and death. For the fetus, preeclampsia poses increased risks of intrauterine growth restriction, prematurity, and death. Preeclampsia is also recognized as a major risk factor for cardiovascular disease later in life for both the woman and her child (Granger JP, et al., 2001). Pre-eclampsia with a frequency of 3%-7% is a pregnancy related disorder constituting one of the leading causes of fetal and maternal morbidity and mortality world-wide. It is more frequent in nulliparous young women and in older multiparous women. Pre-eclampsia is characterized by the new onset of hypertension and proteinuria occurring from 20 weeks of gestation onward (Ray JG, et al., 2006).

Despite being the one of the leading causes of the maternal morbidity and mortality, the etiology and pathogenesis of pre-eclampsia remain to be elucidated. Until date, endothelial dysfunction in the placental vasculature is considered as a widely accepted theory for the etiology and the pathogenesis of the disease (Ziaei S, et al., 2006). Several other factors including genetic, immune, vascular and oxidative stress are also implicated in the pathogenesis of pre-eclampsia, which lead to the studies for identification of potential screening markers of the disease (Chandi A, et al., 2015).

Objective

The main objective study is to analyses the maternal serum triglycerides levels in women with pre-eclampsia.

METHODOLOGY OF THE STUDY

This study was conducted at Allied Hospital, Faisalabad during 2019 to 2020. The data were collected from 100 pregnant females. According to the criteria for the definition of pre-eclampsia given by the International Society for the Study of Hypertension in Pregnancy. Peripheral fasting blood specimens were collected from all control and preeclamptic subjects. Blood was always collected before onset of labor. Serum was separated for analysis. Triglycerides were determined after enzymatic hydrolysis with lipases. The indicator was a quinoneimine formed from hydrogen peroxide, 4-aminop- henazone and 4-cholorophenol under the catalytic influence of peroxidase.

Statistical analysis

Data was analyzed using SPSS for Windows (version 17.0, SPSS Inc., Chicago, Illinois, USA). The data is presented descriptively, providing the number of women, mean values and standard deviations. The differences between preclamptic cases and normal pregnant women were investigated using t-test for continuous data

RESULTS

The age of the studied pregnant females ranged between 16 and 42 years. The mean age of cases (pre-eclamptic) and controls (normal) pregnant women was 29.6 (6.1) and 29.5 (6.1) years respectively. There was no statistically significant difference in the maternal ages of both groups. Body mass index, which was only recorded at the time of blood sampling was
Zaka A: A Study on Maternal Serum Triglycerides Level in Women with Pre-Eclampsia

Mean serum triglyceride concentrations in pre-eclamptic and controls normal pregnant women were 3.1 mmol/l and 2.5 mmol/l respectively. There was significantly high serum triglyceride concentration (P<0.01) in the pre-eclamptic group than in the normal pregnant women. No significant differences were observed in other measured lipid profile including total cholesterol, HDL and LDL (Table 2).

Table 1: Demographic and clinical characteristics of controls and pre-eclamptic subjects

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Controls</th>
<th>Pre-eclampsia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td>25.56 ± 3.68</td>
<td>24.65 ± 4.25</td>
</tr>
<tr>
<td>Primigravida</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Multigravida</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Gestational Age (weeks)</td>
<td>32.87 ± 1.45</td>
<td>32.31 ± 1.19</td>
</tr>
<tr>
<td>Systolic BP (mmHg)</td>
<td>113.13 ± 10.78</td>
<td>166.25 ± 20.62*</td>
</tr>
<tr>
<td>Diastolic BP (mmHg)</td>
<td>86.88 ± 9.46</td>
<td>133.75 ± 15.0*</td>
</tr>
<tr>
<td>BMI</td>
<td>27.69 ± 2.47</td>
<td>28.88 ± 2.31</td>
</tr>
</tbody>
</table>

*P<0.01 as compared to normal control

Table 2: Comparison of lipid profile of normal pregnant women and pre-eclampsia patients

<table>
<thead>
<tr>
<th>Serum lipids (mmol/l)</th>
<th>Mean (SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-eclampsia (n=40)</td>
<td>Normal (n=80)</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>6.7 (1.3)</td>
<td>6.4 (1.3)</td>
</tr>
<tr>
<td>HDL</td>
<td>1.5 (0.3)</td>
<td>1.5 (0.4)</td>
</tr>
<tr>
<td>LDL</td>
<td>3.9 (1.1)</td>
<td>3.8 (1.0)</td>
</tr>
<tr>
<td>Triglyceride</td>
<td>3.1 (0.8)</td>
<td>2.5 (0.1)</td>
</tr>
</tbody>
</table>

*P<0.01 as compared to normal control

DISCUSSION

We observed significantly increased triglycerides and decreased HDL-cholesterol during Pre-eclampsia, which provide evidence of abnormal lipid metabolism. Pre-eclampsia is characteristically associated with hypertriglyceridermia (Akhavan S, et al., 2009). Increased levels of triglycerides with reduced high-density lipoprotein-cholesterol have been observed in our study as shown in Table 2. These types of higher results also reported by other studies on pre-eclamptic women. Dyslipidemia in preeclamptic women is characteristic of what occurs in insulin-resistant, hyperglycemic women who are not pregnant, many of whom also have the clustering of metabolic syndrome characteristics that include hypertension (Brown MA, et al., 2003). It is concluded that the women who develop pre-eclampsia had disturbed lipid profile due to abnormal lipid metabolism. Increased triglycerides levels and delayed triglycerides clearance and high blood pressure are the reasons for the development of preeclampsia.

REFERENCES