



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2653873>Available online at: <http://www.iajps.com>**Research Article****A STUDY ON MATERNAL SERUM TRIGLYCERIDES
LEVEL IN WOMEN WITH PRE-ECLAMPSIA**Dr Muhammad Ali Zia¹, Dr Muhammad Tahir², Dr Urooj Iqbal³¹ Aziz Bhatti Shaheed Teaching Hospital, Gujrat² Government Mayo Hospital, Lahore³ District Head Quarter Hospital, Hafizabad

Article Received: February 2019

Accepted: March 2019

Published: April 2019

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 analyse the maternal serum triglycerides levels in women with pre-eclampsia. **Methodology of the study:** This study was conducted at Aziz Bhatti Shaheed Teaching Hospital, Gujrat during June 2018 to December 2018. 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 pre-eclamptic 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. **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 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.

Corresponding author:**Dr. Muhammad Ali Zia,**

Aziz Bhatti Shaheed Teaching Hospital, Gujrat

QR code

Please cite this article in press Muhammad Ali Zia et al., **A Study On Maternal Serum Triglycerides Level In Women With Pre-Eclampsia** ., Indo Am. J. P. Sci, 2019; 06(04).

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 [1]. 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 [2]. 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 [3].

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 [4]. 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 [5].

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 Aziz Bhatti Shaheed Teaching Hospital, Gujrat during June 2018 to December 2018. 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 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 not significantly different. Mean systolic and diastolic blood pressures were significantly higher in pre-eclamptic group than in the normal pregnant groups. (table 01)

Table 01: Demographic characteristics of selected patients**Table-I: Demographic and Clinical Characteristics of Controls and Pre-eclamptic subjects.**

<i>Parameters</i>	<i>Control</i>	<i>Pre-eclampsia</i>
Age (years)	25.56 ± 3.68	24.65 ± 4.25
Primigravida	8	6
Multigravida	8	10
Gestational age (weeks)	32.87 ± 1.45	32.31 ± 1.19
Systolic BP (mmHg)	113.13 ± 10.78	166.25 ± 20.62*
Diastolic BP (mmHg)	86.88 ± 9.46	133.75 ± 15.0*
BMI	27.69 ± 2.47	28.88 ± 2.31

* $P < 0.01$ as compared to normal control.

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 02).

Table 02: Comparison of lipid profile of normal pregnant women and pre-eclampsia patients

Serum lipids (mmol/l)	Mean (SD)		P value
	Pre-eclampsia (n=40)	Normal (n=80)	
Total cholesterol	6.7 (1.3)	6.4 (1.3)	0.284
HDL	1.5 (0.3)	1.5 (0.4)	0.817
LDL	3.9 (1.1)	3.8 (1.0)	0.561
Triglyceride	3.1 (0.8)	2.5 (0.1)	<0.01*

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 hypertriglyceridemia [5]. Increased levels of triglycerides with reduced high-density lipoprotein - cholesterol have been observed in our study as shown in Table-II. 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 [7]. This suggests that a similar pathophysiological process may be occurring in women with preeclampsia and could be contributing to the dyslipidemia changes [8]. Insulin resistance and type 2 diabetes are characterized by the increased overproduction of the triglyceride-rich very-low-density lipoprotein cholesterol and subsequent increased levels of other triglyceride-rich lipoproteins, which are included in non-HDL-C and reflected in elevated triglyceride levels [9].

Pregnancy is a hyperlipidemic state which is not atherogenic but under hormonal control. Women who develop preeclampsia have different serum lipid profile as compared with normotensive pregnant women. Pregnant women with hyperlipidemia and hypertriglyceridemia have increased incidence of developing more severe forms of preeclampsia. Women with elevated lipid levels likely have preexisting endothelial dysfunction that is worsened as a result of the physiological burden of pregnancy; this condition may be further exacerbated by increased maternal vascular inflammation [10].

CONCLUSION:

It is concluded that the women who develop preeclampsia 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:

1. Hubel CA. Oxidative stress in the pathogenesis of preeclampsia. *Proc Soc Exp Biol Med.* 1999;222(3):222–235.
2. Granger JP, Alexander BT, Llinas MT, et al. Pathophysiology of hypertension during preeclampsia linking placental ischemia with endothelial dysfunction. *Hypertension.* 2001;38(3 Pt 2):718–722.
3. Ray JG, Diamond P, Singh G, Bell CM. Brief overview of maternal triglycerides as a risk factor for pre-eclampsia. *BJOG.* 2006;113(4):379-86.
4. Ziaei S, Bonab KM, Kazemnejad A. Serum lipid levels at 28-32 weeks gestation and hypertensive disorders. *Hypertens Pregnancy.* 2006;25(1):3-10.
5. Chandi A, Sirohiwal D, Malik R. Association of early maternal hypertriglyceridemia with pregnancy-induced hypertension. *Arch Gynecol Obstet.* 2015; 292: 1135-43.
6. Akhavan S, Modarres Gilani M, Borna S, Shahghaibi S, Yousefinejad V, Shahsavari S. Maternal plasma lipid concentrations in first trimester of pregnancy and risk of severe preeclampsia. *Pak J Med Sci.* 2009;25:563–567.
7. Brown MA, Lindheimer MD, de Swiet M, Van Assche A, Moutquin JM. The classification and diagnosis of the hypertensive disorders of pregnancy: Statement from the international society for the study of hypertension in pregnancy (ISSHP) *Hypertens Pregnancy.* 2001;20:IX–XIV. [[PubMed](#)]
8. Clausen T, Djurovic S, Henriksen T. Dyslipidemia in early second trimester is mainly a feature of women with early onset preeclampsia. *BJOG.* 2001;108:1081–7.
9. Koçyigit Y, Atamer Y, Atamer A, Tuzcu A, Akkus Z. Changes in serum levels of leptin, cytokines and lipoprotein in pre-eclamptic and normotensive pregnant women. *Gynecol Endocrinol.* 2004;19:267–73.
10. Lorentzen B, Drevon CA, Endresen MJ, Henriksen T. Fatty acid pattern of esterified and free fatty acids in sera of women with normal and pre-eclamptic pregnancy. *Br J Obstet Gynaecol.* 1995;102:530–7.