ORIGINAL ARTICLE

Lipid Profile Abnormalities in Women with Pre-Eclampsia

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[1] Collect the data and write the manuscript

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ABSTRACT

Objective: To determine the associations of lipid profile abnormalities with pre-eclampsia in pregnant women.

Study Design and Setting: This cross sectional has been conducted Department of gynaecology of LUMHS and Altibri medical college Isra university.

Duration: 6 months March 2016 to August 2016

Methodology: Total 102 diagnostic women with pre-eclampsia were selected. Lipid profile abnormalities were evaluated by fasting blood sample from hospital laboratory. All the data regarding eclampsia, demographic characteristics and lipid profile abnormalities was entered in the proforma.

Results: Patients mean age was found 31.5+4.2 years, mean gestational age was 33.3+6.2 weeks. Mild pre-eclamptic women were in the majority 57.5% and Severe pre-eclamptic women 42.5%. Lipid profile abnormalities were found significantly associated with severity of pre-eclampsia P-value 0.03. As well as mean of total cholesterol was 240.43+56.08 in women having mild eclampsia while in severe eclamptic women total cholesterol was found as: 270.64+ 44.45. Similarly, LDL and TG were also found elevated in women with severe eclampsia.

Conclusion: We concluded that lipid profile abnormalities were significantly associated with pre-eclampsia, means it is the major risk factor for eclampsia.

Key words: Pregnant women, pre-eclampsia, lipid profile abnormalities

Introduction

Pre-eclampsia is the regular and common pregnancy complication. Rate of the pre-eclampsia is estimated around 8-10% of pregnancies.[1] It contributes the mortality and morbidity for both fetal and mother. Its prevalence, complication and also relationship of maternal and fetal consequences in a Pakistani women community, indicated high frequency of pre-eclampsia 19%.[2,3] Pre-eclampsia most usually happens amid the last pregnancy trimester when it emerges in the mid second trimester 14 to 20 weeks. Risks of the creating pre-eclampsia seen greater in those women who had family history of the hypertension, and there may likewise be an association between metabolic syndrome the gestational hypertension.[2,4] Relationship of serum lipid profile abnormalities in preeclampsia is reported well. An anomalous lipid profile to be emphatically linked with atherosclerotic CVD and directly affects endothelial dysfunction. The most critical component of the pre-eclampsia is hypertension which should be because of vasospastic phenomenon in the kidneys, placenta, brain and the uterus.[5] Lipid profile abnormalities leading to reduction in the PGI2:TXA2 proportion is additionally expected to be an essential method for pathogenesis in the pregnancy activated hypertension.[6] Consequently lipid metabolism abnormalities appears to be imperative in pre-eclampsia pathogenesis. Pre-eclampsia and its associated events are known to influence capacity of different organs required in metabolism of lipid and the lipoprotein. A few reviews have demonstrated that endothelial dysfunction is identified with hyperlipidemia.[6]

Some demonstrated that significant elevated TG levels, phospholipids and total lipids and HDL-C levels were seen in patients with pre-eclampsia in contrast with the women of normal pregnancy.[7,8] In spite of impressive research, the reasons for pre-eclampsia stay unclear and there are no clinical helpful screening diagnoses to recognize women in whom it will create.[9,10] Therefore the purpose of present series to assessment of lipid profile abnormalities in women with pre-eclampsia.

Methodology

This cross-sectional study has been carried out at the gynaecological department of LUMHS and Altibri medical college Isra University. Study was conducted with 6 month of duration form march 2016 to august 2016. All the women with third trimester of pregnancy and diagnosed with pre-eclampsia were included in the study. Verbally informed consent was taken from all the women, and those were not agreed to participate in the study, and having obesity along with other strong risk factors of hypertension were excluded, women had had history of dyslipidemia before the pregnancy were also not selected. Complete clinical examination and laboratory routine investigations were carried out in all selected women. Preeclampsia was categorized in two categories and defined as mild pre-eclampsia (SBP >140 and DBP >90), and severe preeclampsia (SBP >160 and DBP >110). For assessment of lipid profile abnormalities, 5 cc fasting blood samples were collected form the patients and send to the hospital laboratory. All the data regarding demographic characteristics, mild pre-eclampsia, severe pre-eclampsia lipid profile abnormalities was recorded in the proforma.

All the data was entered in SPSS version 20 for the analysis. Mean and standard deviation was calculated for quantitative variables like age, BMI, and blood pressure. Frequency and percentage was calculated for categorical variables like gender and residential status. T test was applied for the caparison of lipid profile between mild and severe pre-eclampsia. P-value less than 0.05 was considered as significant.

Results

In this study total 120 women with pre-eclampsia were selected for out patients department of gynaecology. Mean age of the women was found 31.5 ± 4.2 years with the rang of minimum 21 years and maximum 40 years. Mean gestational age of the study participants was 33.3 ± 6.2 weeks. All the women were underwent BMI measurement

and their mean of body mass index was 26.4 ± 2.10, the mean of body mass index was under normal range because obese pregnant women were not selected in the study because obesity is also a risk factor for hypertension and we had focused on lipid profile abnormalities as a risk factor, therefore women with other known strong factors responsible for eclampsia were also not studied. Out of total women multipara were in the majority 66.76% and primi para were 33.34%. urban residential women were found in the majority 54.16%, and rural women were 45.83%. Rural women were mostly seen with very poor antenatal care these women mostly were uneducated and belong to poor families, these women mostly were referred from the local maternity homes of rural areas.**Table:1**.

Table I: Demographic characteristics of women. N= 120	
Basic characteristics	**Frequency/%**
Age	
Patients age (mean $\pm$SD)	31.5 ± 4.2 years
Gestational age (mean$\pm$SD)	33.3 ± 6.2 weeks
BMI	26.4 ± 2.10
Parity	
Primi	40/33.34%
Multi	80/66.76%
Residence	
Rural	55/45.83%
Urban	65/54.16%

In this study mild pre-eclamptic cases were seen in the majority 57.5% and Severe pre-eclampsia was found in 42.5%. **Table:2**.

Table:2 Blood pressure of women. (N= 120)	
Blood pressure	**Frequency/%**
Mild pre-eclampsia (BP >140/90 mm Hg)	69/57.5%
Severe pre-eclampsia(BP >160/110 mm Hg)	51/42.5%

In present series lipid profile abnormalities were found significantly associated with severity of pre-eclampsia P-value 0.03. As well as mean of total cholesterol was 240.43 ± 56.08 in women having mild eclampsia while in severe eclamptic women total cholesterol was found as: 270.64 ± 44.45. Similarly LDL and TG were also found

Table:3 Lipid profile abnormalities according to mild and serve pre-eclampsia. (N= 120)			
Lipid profile	Mild pre-eclampsia n=69	Severe pre-eclampsia n=59	P-value
	mean$\pm$SD	mean$\pm$SD	
Total cholesterol	240.43 $\pm$ 56.08	270.64$\pm$ 44.45	
HDL	48.49$\pm$ 11.41	40.80 $\pm$ 12.06	
LDL	115.51$\pm$ 48.62	155.48$\pm$ 33.20	
TG	272.00 $\pm$ 68.0	382.22 $\pm$ 90.43	0.03*

significantly elevated in women with severe eclampsia as compare to mild pre eclampsia. **Table:3**

<div style="background:#8B0000;color:white;text-align:center">Discussion</div>

Eclampsia is the commonest cause of maternal morbidity and mortality and it estimated according to other studies as

event of the hypertension during pregnancy, particularly pre-eclampsia, are a pregnancy-particular issue which influences 3-5% of pregnant women throughout the world.[11-13] Preeclampsia is a standout amongst the most regularly experienced pregnancy complication. Traditionally, situation presents with the newly onset high blood pressure and the proteinuria following 20 weeks of the gestation.[13,14] In creating nations where access to medicinal services are not completed, preeclampsia is the main source of maternal death, causing an expected 60,000 maternal mortality overall for every year.[13-15] There are many risk factors are reported in the previous published studies. This study was conducted to evaluate the lipid profile abnormalities in women with pre-eclampsia, and we found lipid profile abnormalities are the important risk factor for pre-eclampsia. In comparison to our study, study conducted by J. T. Gohil et al[16] also found in their study that lipid profile abnormalities as highly reduced HDL level and significantly raised total cholesterol, LDL, VLDL & TG levels are clearly evident in cases having pre-eclampsia as contrast to non-pregnant, and normotensive pregnant women. On other hand Kalar MU et al[15] concluded that pre-eclamptic cases had lipid profile abnormalities due to the lipid metabolism abnormalities and increased TG levels and delayed TG clearance and hypertension are ground for preeclampsia development. Consistently Lima VJ et al[13] also reported that positive correlation in between higher VLDL and triglyceride levels and increased proteinuria level in pre-eclamptic women. The previous published studies demonstrated that plasma lipid concentrations were greater in pre-eclamptic women as compare to normotensive pregnant women.[17] It is believed that lipid alteration perform the role at damage of endothelial cell that is the characteristic pre-eclamptic symptom. Oxidized LDL inhibits the synthesis of endothelial prostacyclin and EDRF and also the synthetic

stimulization and release of the endothelin hormone that contain contracting effects of the smooth muscles.[18]

In our study, women with mild pre-eclampsia were found in the majority 57.5% and Severe pre-eclampsia was found in 42.5% of the pregnant women. While inconsistently Iftikhar U et al[19] reported the women with severe eclampsia are more as compare to women had mild eclampsia. This difference may due to we had excluded other strong risk factors of eclampsia.

In this study lipid profile abnormalities were found significantly associated with severity of pre-eclampsia P-value 0.03. As well as mean of total cholesterol was 240.43$\pm$ 56.08 in women having mild eclampsia while in severe eclamptic women t was found as: 270.64$\pm$ 44.45. Similarly, LDL and TG were also found elevated in women with severe eclampsia. In comparison to our study, other studies performed previously reported that serum TG levels were found significantly high in early pregnancy in pre-eclamptic patients.[20,21] Ware-Jauregui et al[22] stated that elevated TG level and decreased HDL concentration in pre-eclamptic women as compared to the control study group. James T et al reported that maternal BMI, TG and fatty acids increase significantly in pre-eclamptic patients.[23]

Another study conducted by Özgür Özdemir1et al[24] also reported that dyslipidemia could be important cofactor in preeclampsia, in their results they found that significant positive correlation between proteinuria and total cholesterol, TG, LDL, and VLDL concentrations p<0.05 and significant negative correlation between proteinuria and the HDL concentrations r:-0.202, also there was positive correlations between systolic hypertension and the levels of the cholesterol, TG and VLDL, and between diastolic blood pressure and levels of the LDL, TG and VLDL. In this study patients mean age was found 31.5+4.2 years, mean gastatoii0onal age was 33.3+6.2 weeks. Kalar MU et al[15] also found comparable findings and reported that mean age of the women was 29 years, and the gestational mean age was 36 weeks in pre-eclamptic women. Similarly Mankuta D

et al[25] demonstrated that pregnant women's mean age was 30.4 years.

Conclusion

In the conclusion of this study the lipid profile abnormalities are the major risk factor of pre-eclampsia. It is therefore, very important that, lipid profile should be screened during antenatal care in the pregnant women to reduce the maternal and fetal morbidity and mortality due to pre-eclampsia.

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