

Lipid Profile Derangements in Women with Preeclampsia at a tertiary care hospital

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ABSTRACT

Aim: To determine the frequency of dyslipidemia in women with preeclampsia at a tertiary care hospital.

Methods: Seventy eight women presenting with preeclampsia were taken in our study. This cross sectional study was conducted at Department of Obs.&Gynae, Nishtar Hospital, Multan using nonprobability convenient sampling technique. Data analysis was done by using SPSS Version 20 to calculate mean values and standard deviations for the numerical data like age of preeclamptic women, BMI, serum cholesterol, serum LDL-C, serum triglyceride levels and serum HDL. Categorical variables have been analyzed as frequencies and percentages while impact of potential confounding variables was also controlled by applying chi square at 0.05 level of significance.

Results: Mean age of our patients was 26.88±6.22 years (ranging from 19 years to 42 years). Forty seven (60.3%) of these preeclamptic women were less than 30 years of age. Of these 78 preeclamptic patients, 27(34.6%) were from rural areas and 51(65.4%) from urban areas. Most of the patients i.e., 52(66.7%) were from poor social background while 26(33.3%) belonged to middle income families and none belonged to higher socioeconomic status. History of diabetes was present in 11 (14.1%) and family history of preeclampsia was present in 27 (34.6%). Mean parity of these patients was 3.22±0.85 and 23(29.5%) were primigravida. Mean body mass index of our patients was 26.35±2.31 kg/m² and 15(19.2%) were obese. Mean serum cholesterol level was 192.90±27.78mg/dl, mean serum triglyceride level was 248.62±78.81mg/dl, mean serum low density lipoprotein was 119.23±10.12 mg/dl

Conclusion; Frequency of dyslipidemia in preeclamptic women was high in our study which was significantly associated with previous history of diabetes. Clinicians treating such patients should monitor their lipid profile on regular basis so as to protect these preeclamptic women from future adverse cardiovascular events.

Keywords: Preeclampsia, dyslipidemia, serum cholesterol.

INTRODUCTION

Preeclampsia is one of the commonest medical complications reported in pregnancy which can complicate around 2–8% pregnancies^{1,2,3}. Preeclampsia is one of the major causes of maternal and neonatal morbidity and mortality all over the world^{3,4}. It is 2nd leading cause of the maternal mortalities occurring more than 99% in developing countries like Pakistan. Moreover, preeclamptic women are prone to risks of cardiovascular disorders in their later ages. Different risk factors of the pre-eclampsia have been documented which may include maternal ages more than 35 years and less than 15 years, increased body weight, renal diseases, multiple pregnancies and diabetes. It is more common in African American race⁵. Different underlying factors have been associated with its pathogenesis such as genetic, immune, vascular and oxidative stress, still etiology remains uncertain as there is limited evidence regarding its pathogenesis which makes its

prevention and treatment as an ongoing challenge for routine working of Gynecologists⁶.

Clinical signs of preeclampsia may appear in 2nd half of pregnancy while its initial pathogenic phenomenon may express earlier than onset of these clinical signs⁷. The cytotrophoblast cannot remodel spiral arteries which may lead to the hypoperfusion and placental ischemia. The fetal abnormalities are in terms of growth restriction, on the other hand on maternal side, placental ischemia releases certain factors which enhance maternal endothelial dysfunction which manifests itself in terms of clinical symptoms and complications associated with preeclampsia like “hypertension, proteinuria, renal impairment, thrombocytopenia, epigastric pain, liver dysfunction, hemolysis-elevated liver enzymes-low platelet count (HELLP) syndrome, visual disturbances, headache and seizures”⁸⁻¹¹. Majority of the patients having pregnancy induced hypertension are without any clinical signs and symptoms and hence proper antenatal care remains an important tool in the diagnosis and management of the preeclampsia which can identify women at increased risk, early

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diagnosis followed by the proper management of the progression of the severity of the disease¹²⁻¹⁵. Endothelial dysfunction is generally accepted phenomenon regarding etiology of preeclampsia, due to accumulation of fibrin and platelets and deposition of lipid-laden microphages in the vascular bed, placental perfusion is reduced. Such findings have given rise to the hypothesis that impairments of lipid metabolisms may be one of the major causes of endothelial dysfunction¹⁶.

Keeping above mentioned facts in mind, this study was planned to document serum lipid derangements in pre-eclamptic women which will lead to the proper management of the these patients with appropriate lipid lowering therapies and will protect them from future major cardiovascular events which have already been associated with these patients in later parts of the life.

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Obstetrics and Gynecology, Nishtar Hospital, Multan using non-probability convenient sampling technique. Seventy eight women presenting with preeclampsia were taken in our study. All the women with preeclampsia defined as "systolic blood pressure above 140 mmHg and diastolic pressure >90mmHg measured at least two times with 4 hours interval and proteinuria ≥ 300 mg/day after 20 weeks of gestation (confirmed on LMP) having ages ranging from 18–45 years were included irrespective of their parity (primigravida and multigravida were taken). Patients who were taking any lipid lowering therapy and those with twin pregnancies were excluded from our study. These pre-eclamptic patients were interviewed for the their demographic distribution like age, residential status, socioeconomic status, educational level, family history of the preeclampsia, history of diabetes and obesity. Poor socioeconomic status was defined as if monthly family income was equal or less than 25000 rupees per month while middle income were those who had monthly familyincome ranging from 25000 to 50000 rupees and rich if higher than that. Patients who were previously diagnosed with diabetes and were taking any hypoglycemic therapy were defined as diabetic while body mass index (BMI) more than 27.5 kg/m² was taken as obesity and family history of preeclampsia was labeled as presence of disease in first degree relatives. Informed consent was taken from the patients for participation in this study, 3 ml of venous blood sample was drawn and sent to the Hospital laboratory for serum lipid levels to observe derangement in any of values as under; serum cholesterol > 200mg/dl, serum LDL-C > 130mg/dl,

serum TG > 150mg/dl and serum HDL <40mg/dl and dyslipidemia was defined in any one of the derangement listed above.

Data analysis was done by using SPSS Version 20 to calculate mean values and standard deviations for the numerical data like age of preeclamptic women, BMI, serum cholesterol, serum LDL – C, serum triglyceride levels and serum HDL. Categorical variables have been analyzed as frequencies and percentages while impact of potential confounding variables was also controlled by applying appropriate statistical test of significance (chi square) at 0.05 level of significance.

RESULTS

We recruited a total of 78 women having pre-eclampsia in our study. Mean age of our patients was 26.88 \pm 6.22 years (ranging from 19 years to 42 years). Forty seven (60.3%) of these preeclamptic women were less than 30 years of age. Of these 78 preeclamptic patients, 27(34.6%) were from rural areas and 51(65.4%) from urban areas. Most of the patients i.e., 52(66.7%) were from poor social background while 26(33.3%) belonged to middle income families and none belonged to higher socioeconomic status. History of diabetes was present in 11(14.1%) and family history of preeclampsia was present in 27(34.6%). Mean parity of these patients was 3.22 \pm 0.85 and 23(29.5%) were primigravida. Mean body mass index of our patients was 26.35 \pm 2.31 kg/m² and 15(19.2%) were obese. Mean serum cholesterol level was 192.90 \pm 27.78 mg/dl, mean serum triglyceride level was 248.62 \pm 78.81 mg/dl, mean serum low density lipoprotein was 119.23 \pm 10.12 mg/dl and high density lipoprotein level was 67.51 \pm 12.43mg/dl. Dyslipidemia was present in 46(59%) preeclamptic women.

Fig 1: Distribution of gravidity

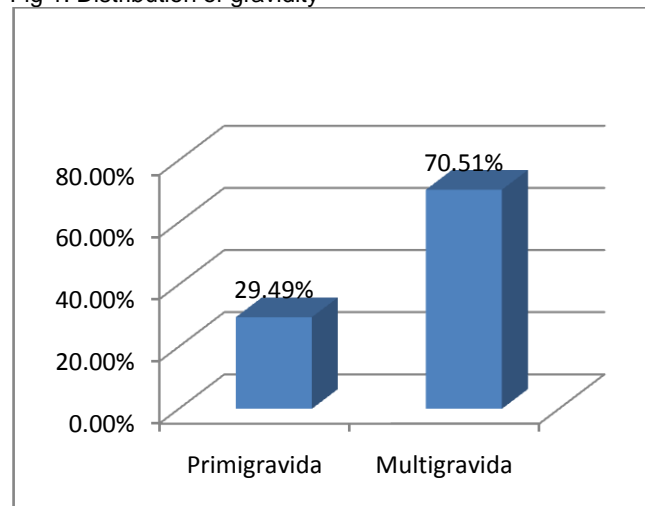


Fig. 2: Distribution of Family History of preeclampsia.

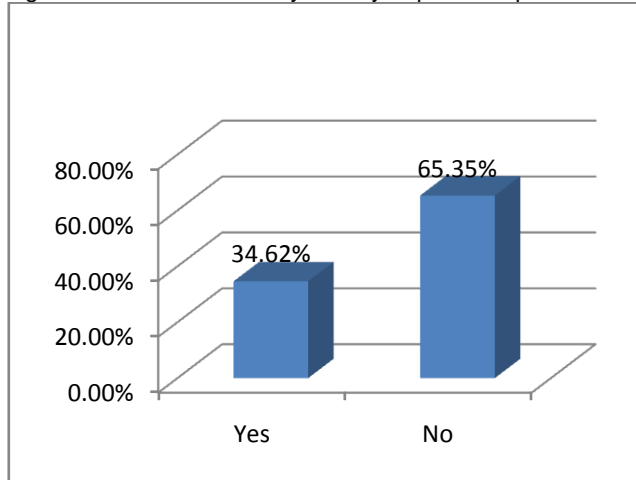


Table 1: Distribution of dyslipidemia with regard to different characteristics (n= 78)

Characteristics	Dyslipidemia		P value
	Yes	No	
Age in years			
Up to 30	27	20	0.816
More than 30	19	12	
Residential status			
Rural	19	08	0.155
Urban	27	24	
Socioeconomic status			
Poor	30	22	0.810
Middle Income	16	10	
Diabetes			
Yes	11	00	0.002
No	35	32	
Family History			
Yes	16	11	1.00
No	30	21	
Obesity			
Yes	08	07	0.771
No	38	25	
Gravidity			
Primigravida	15	08	0.313
Multigravida	31	24	

DISCUSSION

Preeclampsia, one of the leading medical complications of the pregnancy, leads to the significant maternal and fetal morbidity in poor and middle income countries and hence has significant impact on national health expenditures with a high proportion of patients with preeclampsia in Pakistan that is around 19 % which is very high. Derangement in lipid profile in early pregnancy is an important predictor of the preeclampsia and these patients show great variation in lipid parameters and impairments of lipoprotein metabolism is a leading

cause of the hypertension and proteinuria in preeclamptic patients¹⁷.

We recruited a total of 78 women having preeclampsia in our study. Mean age of our patients was 26.88±6.22 years (ranging from 19 years to 42 years). Forty seven (60.3%) of these preeclamptic women were less than 30 years of age. A study conducted by Aziz et al¹⁷ from Karachi has also reported that 24.65±4.25 years mean age of the preeclamptic patients, which is close to our results.

Of these 78 preeclamptic patients, 27 (34.6%) were from rural areas and 51(65.4%) from urban areas. Most of the patients i.e., 52(66.7%) were from poor social background while 26(33.3%) belonged to middle income families and none belonged to higher socioeconomic status. History of diabetes was present in 11(14.1%) and family history of preeclampsia was present in 27(34.6%). Mean parity of these patients was 3.22±0.85 and 23(29.5%) were primigravida. A study conducted by Aziz et al¹⁷ from Karachi has also reported that 37.5% women with preeclampsia were primigravida and 62.5% were multigravida which is close to our study results.

Mean body mass index of our patients was 26.35±2.31 kg/m² and 15(19.2%) were obese. Obesity has been reported to be an important predictor for preeclampsia. A study conducted by Aziz et al¹⁷ from Karachi has also reported 28.88 ± 2.31 kg/m² body mass index of the preeclamptic patients which is in compliance with our study results. Munazza et al¹⁸ from Mansehra has also reported mean BMI of the pre-eclamptic women was 29.04±3.97kg/m² which is close to our findings.

Mean serum cholesterol level was 192.90±27.78 mg/dl, mean serum triglyceride level was 248.62±78.81 mg/dl, mean serum low density lipoprotein was 119.23±10.12mg/dl and high density lipoprotein level was 67.51±12.43 mg/dl. Dyslipidemia was present in 46(59%) preeclamptic women. A study conducted by Aziz et al¹⁷ from Karachi has also reported mean serum cholesterol level in preeclamptic patients was 177.5±57.19 mg/dl, mean serum triglyceride level was 232.18±10.41mg/dl, mean serum HDL level was 39.75 ± 11.99 mg/dl and mean serum LDL level was 117.93±12.56 mg/dl, these findings are close to our study results. Similar patterns have been reported by Syed et al¹⁹ which are in compliance with our study results. Dodani et al²⁰ from Karachi has also reported mean serum triglyceride levels of the preeclamptic women was 235.53 mg/dl which is same as that of our findings. Sharami et al²¹ reported deranged serum cholesterol levels in 58.5%, deranged LDL in 65.9%, deranged HDL levels in 9.5% and deranged triglyceride levels in 58.5% women having

preeclampsia. These findings of Sharami et al²¹ are in compliance with our results.

CONCLUSION

Frequency of dyslipidemia in preeclamptic women was high in our study which was significantly associated with previous history of diabetes. Clinicians treating such patients should monitor their lipid profile on regular basis so as to protect these preeclamptic women from future adverse cardiovascular events.

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