A COMPARATIVE STUDY OF SERUM TRIGLYCERIDE BETWEEN PRE-ECLAMPTIC PRIMIGRAVIDA & NORMAL PRIMIGRAVIDA.

Bharat Chavda*, R.S.Trivedi*, Kirit Sakariya**, Ashvin Sorani*, Pankaj Machhar****, Chirag Savalia***

*Assistant Professor, **Associate Professor, ***Professor & Head Department of Physiology, P.D.U. Medical College, Rajkot-360001. ****Tutor-Department of Biochemistry, P.D.U. Medical College, Rajkot-360001.

Abstracts: **Background:** Various physiological & biochemical alterations occur during human pregnancy.Pre-eclampsia is common medical complication with high morbidity & mortality to both mother as well as fetus. **Aim:**To corelate changes in serumTriglyceride between pre-eclampticprimigravida & normal primigravida. **Method:** Present study was conducted in P.D.U. Civil Hospital Rajkot. 50 preeclamptic primigravida & 50 normal primigravida were examined for serum triglyceride level. **Result:** serum triglyceride level in preeclamptic primigravida was 243.36 ± 09.99 mg/dl & in control group it was found 223.74 ± 08.27 mg/dl.With increase in blood pressure (systolic and diastolic), mean serum triglyceride level of preeclamptic primigravida was also increased.**Conclusion:** Present study showed serum triglyceride level increase in preeclamptic primigravida in 3rd trimester.

Key Words: Primigravida, Preeclampsia, Proteinuria, Serum triglyceride.

Author for correspondence: Dr.R.S.Trivedi , Department of Physiology, P.D.U. Medical College, Rajkot (Gujarat)-360001. E- mail: drchavdabharat@gmail.com

Introduction:

Pregnancy is associated with alteration of lipid profile. Soit is essential to monitor lipid profile during pregnancy.

Pre-eclampsia is common medical complication during pregnancy in developing countries where access to health care is [1] leads to high morbidity and mortality to mother and children [2,3].Worldwide incidence of Pre-eclampsia is 3-5%[4] while in India, it is 5-15% & incidence in primigravidae is about 10%[5].

Preeclampsia is a multisystem disorder of unknown etiology characterized by development of hypertension(≥140/90 mmHg) with proteinuria after the 20th week in a previously normotensive and nonproteinuric women[5].

Aim: To corelate changes in serumTriglyceride between pre-eclampticprimigravida & normal primigravida.

Material and Methods:

After permission from Institutional Ethical committee P.D.U. Medical College Rajkot & written consent from subjects, study was conducted at P.D.U. Govt. Medical College & Civil hospital Rajkot, Gujarat, India during the period January 2014 to October 2015.

Study was conducted in 50 Preeclamptic primigravida & 50 normal primigravida in 3rd trimester of pregnancy. 50 cases with preeclampsia, diagnosed by the presence of persistent hypertension (≥ 140/90 mm Hg) with proteinuria & oedema.

Blood pressure was measured in left arm in sitting posture with portable mercury sphygmomanometer. Proteinuria was defined as ≥ +2 on dipsticks random clean catch urine sample found twice at least 4 hours apart.

In the third trimester of pregnancy, 12 hours fasting venous blood was sampled and serum was separated by low-speed centrifugation (3000 g for 15 min) then the serum triglyceride measured using MIURA -1022 I.S.E.F.R.L. ITALY auto analyser by enzymatic methods.

All primigravida with family history of preeclampsia &past history of hypertension, diabetes, dyslipidemia, renal & thyroid disorder were excluded from our study.

Comparison has been done by using paired t test in graph pad prism version 6 software and p value has been obtained.

Result:

Table no.1 shows anthropometric measurement and vital data of preeclamptic primigravida and normal primigravida.

Table No - 1

Anthropometric measurement and vital data of preeclamptic primigravida and normal primigravida.

Parameter	Preeclamptic primigravida [Mean ± SD]	Normal primigravida [Mean ± SD]	'p' value	Significance
Height (cms)	156.10 ± 05.57	151.22 ± 03.76	>0.05	Not significant
Weight (kgs)	51.38 ± 01.69	50.72 ± 01.95	>0.05	Not significant
BMI (kg/m^2)	21.15 ± 01.31	22.20 ± 0.97	>0.05	Not significant
Pulse (beats/ min)	84.46 ± 03.69	82.86 ± 04.37	>0.05	Not significant
Respiratory rate (rate/min)	16.38 ± 01.29	15.58 ± 01.05	>0.05	Not significant
Systolic blood pressure (mm Hg)	150.44 ± 06.51	122.12 ± 06.38	<0.0001	Significant
Diastolic blood Pressure (mm Hg)	98.24 ± 05.85	80.96 ± 03.48	<0.0001	Significant

Chart No 1: Shows vital data of preeclamptic primigravida and normal primigravida.

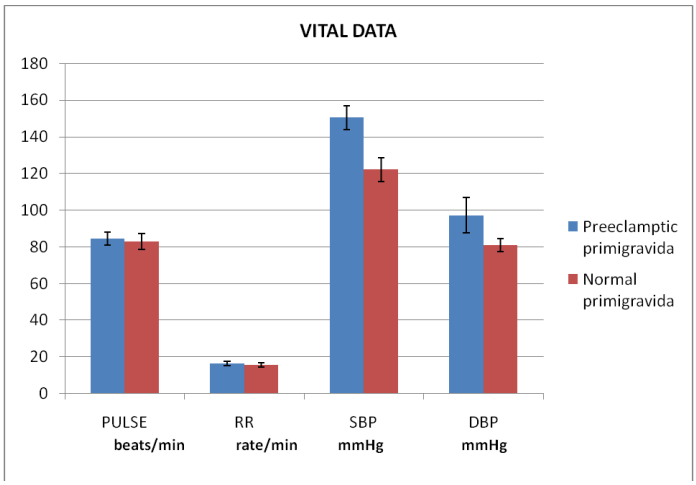


Table no.2 shows serum triglyceride of preeclamptic primigravida & normal primigravida.

Table No - 2

serum triglyceride of preeclamptic primigravida and normal primigravida.

Parameter	Preeclamptic primigravida [Mean ± SD]	Normal primigravida [Mean ± SD]	'p' value	Significance
Triglyceride (mg/dl)	243.36 ± 09.99	223.74 ± 08.27	<0.0001	Significant

Table no.3 shows correlation of serum triglyceride with systolic blood pressure of preeclamptic primigravida.

Table No - 3

Correlation of serum triglyceride with systolic blood pressure of preeclamptic primigravida.

Systolic Blood pressure (mm Hg)	Total no of cases	S.TG (mg/dl) [Mean ±SD]
140-145	15	235.00 ± 06.38
146-150	08	240.75 ± 05.92
151-155	16	246.19 ± 07.57

>155	11	252.55 ± 10.26

Chart No 2- Correlation of systolic blood pressure with serum triglyceride of preeclamptic primigravida.

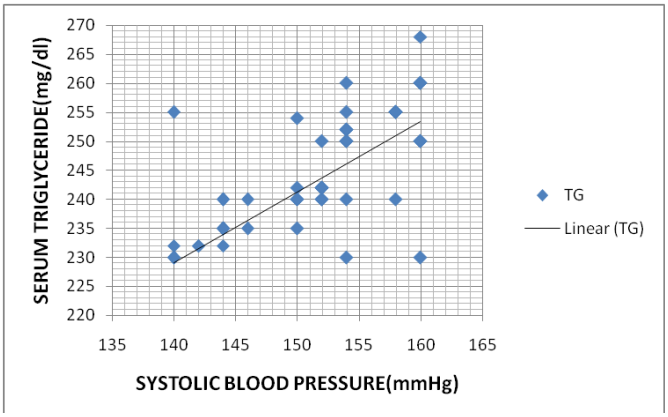


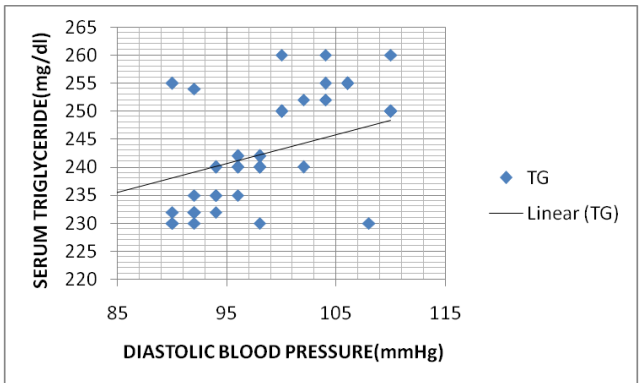
Table no.4 shows correlation of diastolic blood pressure with serum triglyceride of preeclamptic primigravida.

Table No - 4

Correlation of diastolic blood pressure with serum triglyceride of preeclamptic primigravida.

Diastolic Blood pressure (mm Hg)	Total no of cases	S.TG (mg/dl) [Mean ±SD]
85-95	19	236.53±7.21
96-105	22	245.27±7.84
>105	9	253.11±10.23

Chart No 3- Correlation of serum triglyceride with diastolic blood pressure of preeclamptic primigravida.



Discussion:

Detail of present study showed (Table No - 1) that the mean systolic blood pressure in normal primigravida was 122.12 ± 6.38 mm Hg while in preeclamptic primigravida was 150.44 ± 6.51 mm Hg which was increased significantly (P<0.0001).

The mean diastolic blood pressure in normal primigravida & preeclamptic primigravida was 80.96 ± 3.48 mm Hg & 98.24 ± 5.85 mm Hg respectively. which was increased significantly (P<0.0001). Which is corroborated with other authors like Rubina Aziz et al [6],Usha Adiga et al [7].

Table No –2 shows that the mean serum triglycerides in case and control group were 243.36 ± 9.99 mg/dl and 223.74 ± 08.27 mg/dl respectively. Which is statistically significant difference (p<0.0001) These findings correlate well with other authors like Rubina Aziz et al [6],Usha Adiga et al [7],Bayham G et al [8]&Kocyigit y et al[9].

Detail of present study showed (Table No - 3,4) that with increase in blood pressure (systolic and diastolic), mean serum triglyceride level of preeclamptic primigravida increases. For systolic blood pressure between 140-145 mmHg mean serum triglyceride was 235 ± 06.38 mg/dl, for systolic blood pressure between 146-150 mmHg mean serum triglyceride was 240.75 ± 05.92 mg/dl and for systolic blood pressure between 151-155 mmHg mean serum triglyceride was 246.19 ± 07.57 mg/dl. While those having systolic blood pressure > 155 mmHg mean serum triglyceride raised to 252.55 ± 10.26 mg/dl. Those having diastolic blood pressure between 85-95 mmHg mean serum triglyceride was 236.53 ± 07.21 mg/dl and for diastolic blood pressure between 96-105 mmHg mean serum triglyceride were 245.27 ± 07.84 mg/dl while those having diastolic blood pressure >

105 mmHg mean serum triglyceride rose to 253.11 ± 10.23 mg/dl. These observations were in tune with findings of other workers like Gohil J.T. et al [10], phalak et al [11], Biswajit Das et al [12], Meena Mittal et al [13], and Agarval et al [14]. According to Sinan Butrus et al [15] increased triglyceride may contributes to the endothelial dysfunction and hypercoagulability, which mediate the resulting hypertension and preeclampsia. Hypertriglyceridemic dyslipidemia may contribute to endothelial dysfunction, interfere with trophoblast invasion and could also augment development of atherotic changes in the spiral arteries as well as promote prothrombotic mechanisms which may be responsible for development of preeclampsia

Conclusion:

Present study showed that the primigravida who developed preeclampsia had altered serum triglyceride level. Increased triglycerides levels, delayed triglycerides clearance are the reasons for the development of preeclampsia. Hence early detection of these parameters may help in developing strategies for prevention and early diagnosis of preeclampsia which may help to improve the maternal and fetal outcome in preeclampsia.

References:

1. Alice Wang, Sarosh Rana, and S. Ananth Karumanchi. Preeclampsia: The Role of Angiogenic Factors in Its Pathogenesis: Physiology: 2009:24:147-158.
2. Usha Adiga, Vivian D´souza, Asha Kamath, Nandini Mangalore. Antioxidant Activity and Lipid Peroxidation in Preeclampsia: J Chin Assoc: 2007:70(10) :435 - 438.
3. WinnyHirome Takahashi, Silvio Martinelli, Marcos Yorghi Khoury, Reginaldo guides Coelbo Lopes, Sidney Antonio, Lagrosa Garcia, Umberto Gazi Lippi.Assessment of serum lipids in pregnant women aged over 35 years and their relation with pre–eclampsia: Einstein: 2008:6(1): 63 – 67.
4. Angel GAL. Effect of pregnancy on pre-existing liver disease: physiological changes during pregnancy. Ann Hepatol2006; 5: 184–6.
5. D.C.Dutta, Text book of obstetrics: Hypertensive disorders in pregnancy(Chapter 18); 8th Edition: Jaypee Brothers Medical Publishers (p) ltd 2015:, Page No: 256-258.
6. Rubina Aziz, Tabassum Mahboob. PRE-ECLAMPSIA AND LIPID PROFILE: Pak J Med Sci: 2007:23(5):751-754.
7. Usha Adiga, Vivian D´souza, Asha Kamath, Nandini Mangalore. Antioxidant Activity and Lipid Peroxidation in Preeclampsia: J Chin Assoc: 2007:70(10):435 – 438.
8. Bayhan G., Kocyigit Y., Atamer Y., Akkus Z. Potential atherogenic roles of lipids, lipoprotein(a) and lipid peroxidation in preeclampsia.Gynecol Endocrinol 2005;21(1) :1-6.
9. Kocyigit Y., Atamer A., 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(5): 267-273.
10. Gohil J.T., Patel P.K., Gupta P.,Estimation of lipid profile in subjects of preeclampsia. The Journal of Obstetrics and Gynecology of India 2011; 61(4): 399–403
11. Phalak P., Tilak M. Study of lipid profile in pre-eclampsia. Indian Journal of Basic & Applied Medical Research December 2012; 5(2): 405-409
12. Das B., Verma S., Samanta S. and Mallick A.K. Serum uric acid, triglycerides, total cholesterol and hdl-c measurements in pre-eclamptic women. Int J Pharm Bio Sci July 2013; 4(3) :(B): 422-428
13. Meena M., Kulkarni C. V., Panchonia A., Mittal R.K. Evaluation of serum lipid profile in cases of pre-eclampsia and eclampsia. Int J Reprod Contracept Obstet Gynecol. Sep 2014; 3(3): 732-734.
14. Agarwal V., Punia S., Adhikari P. Lipid profile in preeclamptic pregnant women International Journal of Basic Medicine and Clinical Research May 2014;1(1):14-18.
15. Sinan ButrusGarabet. Association of preeclampsia with dyslipidemia. Zanco.J.Med. Sci. 2013; 17(2): 388-392.

Disclosure: No conflicts of interest, financial, or otherwise are declared by authors