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Research Article

**SERUM ALBUMIN AND TRIGLYCERIDES:
A COMPARISON BETWEEN THE PRE-ECLAMPTIC AND
NON-ECLAMPTIC FEMALES****Mahak Memon¹, Mehwish Memon², Imtiaz Ahmed³, Madiha Shah⁴, Ashique Ali Arain⁵,
Razia Hanif⁶**¹MBBS, M. Phil (Biochemistry), Senior Lecturer, Department of Biochemistry, PUMHS, Nawabshah²MBBS, M. Phil (Biochemistry), Senior Lecturer, Department of Biochemistry, Muhammad Medical College³MBBS, M. Phil (Biochemistry), Senior Lecturer Department of Biochemistry, Isra University, Hyderabad.⁴MBBS, FCPS (Medicine), Assistant Professor, Department of Medicine, Liaquat University of Medical and Health Sciences, Jamshoro⁵MBBS, MCPS (Family Medicine), M. Phil (Pharmacology), Consultant Family Physician, Assistant Professor, Department of Pharmacology, Muhammad Medical College, Mirpurkhas, Sindh, Pakistan.⁶MBBS, MD (Medicine), Senior Registrar, Department of medicine, Liaquat University of Medical and health sciences, Jamshoro**Abstract:**

Pregnancy is associated with multiple physiological changes but sometimes these changes result into certain pathologies that may harm the fetus as well as the mother. This current research is of Case-control design at Isra University and conducted during January to June 2015 on 90 females 45 as normal and 45 as pre-eclamptic groups. Patients were provided by IUH and LUMHS whereas controls were there age and sex matched normal pregnant women. Blood samples for serum albumin and triglycerides were taken, tests were performed at Isra University laboratory on automated machines as per protocols. There was no significant difference of age between the two groups $p > 0.5$, whereas highly significant difference was found in serum albumin and serum triglycerides $p < 0.0000001$ as analyzed by student's t-test on SPSS 22nd version.

Conclusion: *There is significant difference between Serum Albumin and serum glycerides levels among the pre-eclamptic and non-eclamptic women.*

Key Words: *Albumin, Pre-eclampsia, Triglycerides, Pregnancy*

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INTRODUCTION:

The history of preeclampsia is very old around 2000BC characterized by hypertension and proteinuria during pregnancy that may further badly affect maternal as well as fetal lives [1–2]. These conditions (Preeclampsia and eclampsia) are the 2nd or 3rd cause of maternal mortality and morbidity on world ranking [3]. Study conducted in 40 countries on 39 million females has shown the prevalence of preeclampsia as 4.6% and that of eclampsia as 1.4% [4]. The severity of Preeclampsia may increase the systolic blood pressure >160mmHg and diastolic blood pressure >110mmHg leading to HELLP syndrome [5]. The pathogenesis behind preeclampsia is thought to be mediated by free radicals (oxidative stress and failure of antioxidants enzyme), immune system (inflammation) and genetics leading to an imbalance in proangiogenic and antiangiogenic mechanisms [6-8]. Angiogenic factors, VEGF (vascular endothelial growth factor) and PlGF (placental growth factor) and two anti-angiogenic proteins namely sEng (soluble endoglin) and sFlt-1 are thought to be involved in preeclampsia development and diagnosis recently [9]. Placental growth factor is a member from the VEGF family, having angiogenic and proinflammatory properties, it is secreted from trophoblast cells. PlGF regulates the angiogenesis (VEGF-dependent) it is responsible for preeclampsia as well as it is a marker of placental dysfunction associated with preeclampsia [10]. According to an estimate preeclampsia results in 70,000 maternal and 500,000 infant deaths every year in the world [11]. Albumin is very important serum protein with a negative charge it has multiple functions in the body from exerting the osmotic pressure to antioxidant activity and binding with majority of drugs. Albumin concentration is reduced in many diseased states leading to death [12]. Triglycerides (TG) play a role in such adverse health conditions as heart disease, peripheral vascular disease, stroke, diabetes mellitus, metabolic syndrome, and cancer, which are common causes of death [1-3]. The present study focuses on evaluation and

comparison of serum albumin and triglyceride levels in blood samples of the pre-eclamptic women and their age matched healthy controls (normal pregnant ladies) with the hope that it may facilitate physicians, and ultimately the society.

METHODOLOGY:

This present study was a case control research which took place at Isra University in biochemistry department and Isra research laboratory. Samples of blood from 90 pregnant ladies were taken for assessing serum albumin and triglycerides, 45 women were non-eclamptic and served as controls whereas 45 women were already diagnosed as eclamptic patients. Patients were non-randomly selected from gynecology outpatient departments of two hospitals IU hospital and LUMHS hospital. Inclusion was based on pregnancy, eclampsia irrespective of age, race, parity and gravidity exclusion was given to non-eclamptic (for control), non-pregnant and comorbid female. All data and samples were taken after written consent. Blood samples of 3.0ml were drawn from antecubital vein under aseptic measures and got analyzed for serum albumin and triglycerides. Mean, standard deviation and ranges were calculated and means were compared on t-test with the help of 22nd version of SPSS at 0.05 level of significance.

RESULTS:

Mean age in non-eclamptic women was 25.18±1.9 years while the age range in this group was 22 -30 years whereas the mean age in eclamptic women was 24.91 ± 01.9 years the difference was not significant. Serum albumin in non-eclamptic group was 1.56 ± 0.39 gm/dl with a range of 1.70 -3.80 gm/dl while it was 3.18 ± 0.25 gm/dl in eclamptic group ranging from 1.10 gm/dl to 2.5gm/dl this difference was highly significant statistically p-0.0000001. Mean triglyceride levels in non-eclamptic was 170.53 ± 18.67mg/dl which ranged between 150mg/dl to 180mg/dl and it was 218.27 ± 2 0.39 in eclamptic group and the range was 181mg/dl to 220mg/dl which also statistically highly significant with a p- value of 0.0000001 [table-I].

Table 1: Comparison of study variables among non-eclamptic and eclamptic women

S. No	Parameters	Group-I n=45	Group-II n=45	p -value
1.	Age in Years	25.18±1.9 (22 -30)	24.91 ± 01.9 (22-30)	0.5
2.	Serum Albumin (gm/dl)	1.56 ± 0.39 (1.70 -3.80)	3.18 ± 0.25 (1.10 - 2.5)	<0.0000001
3.	Serum Triglycerides (mg/dl)	170.53 ± 18.67 (150-180)	218.27 ± 2 0.39 (181- 220)	<0.0000001

Note t-test was applied at 0.05 level of significance

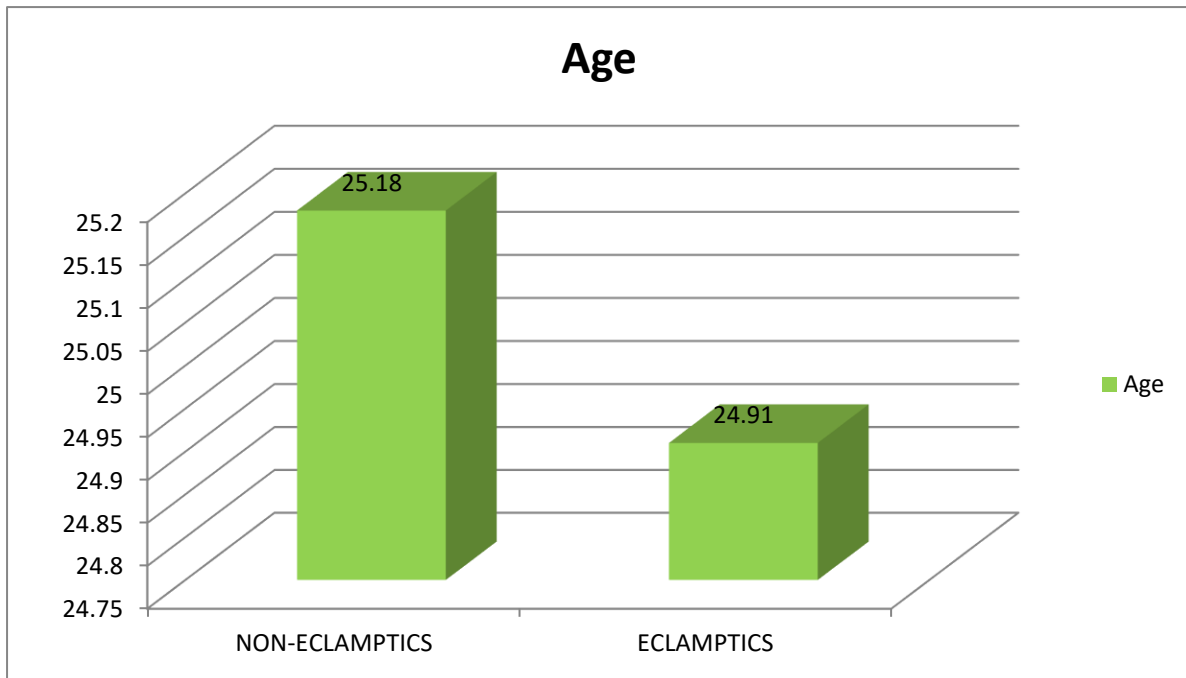


Figure-1 Age difference represented by Bar chart

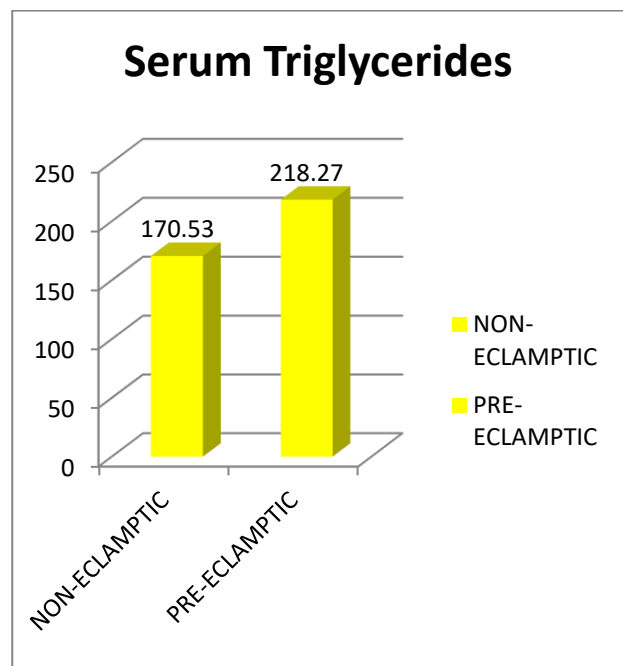
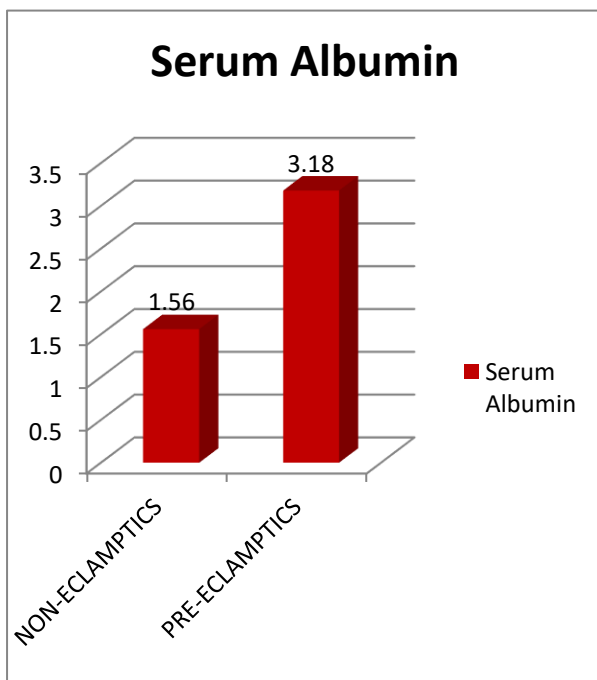


Figure-2A: Difference b/w serum Albumin levels, Figure-2B: difference b/w serum TGs

DISCUSSION:

Hiroyuki Kinoshita et al (2017) conducted his research on 33 controls and 37 pre-eclamptic women and found serum Albumin as 3.5 ± 0.3 gm/dl and 3.1 ± 0.3 gm/dl respectively with $p < 0.0001$ and serum triglycerides as 208 ± 43 mg/dl and 309 ± 167 respectively p -value 0.0009 which is in accordance with our results [16]. Study results of A. Agbecha et al (2018) showed serum albumin in normal control as 42.20 ± 2.91 gm/L and in preeclamptic women as 38.67 ± 3.17 gm/L, p -value was highly significant < 0.0001 which was consistent to our results similarly age was 26.78 ± 6.52 years in control group and 27.43 ± 4.62 years in pre-eclamptic group with p -value 0.584 which was non-significant again consistent finding with our results [17]. mean age in control group 118 ± 43 and pre-eclamptic group 137 ± 30 mg/dl $p = 0.18$ which was inconsistent with our results possibly due to their low sample size for the pre-eclamptic group that is only 10 women in comparison to high size of control group that was 109 while age in controls was 25 ± 4 years and age in pre-eclamptic patients was 26 ± 5 years p -value 0.45 which was consistent to our study findings [18]. Janie Benoit et al (2011) studied two different groups of eclamptic women as severe and non-severe pre-eclampsia females with severe pre-eclampsia had mean serum albumin of 23.5 ± 2.8 g/L and non-severe pre-eclamptic female had mean serum albumin of 25.5 ± 2.8 g/L with P -value of < 0.05 that is significant also consistent to our results [19]. Olooto et al (2013) observed lower levels of serum albumin in women diagnosed as preeclamptic when compared with the serum albumin levels in normal pregnant females [20]. Ghazali et al (2014) also found serum albumin lower in preeclamptic women in comparison to healthier pregnant ladies and our results are consistent with their results [21].

CONCLUSION:

Serum albumin was decreased and serum triglycerides were found increased in preeclamptic women as compared to non-eclamptic women and the difference was highly significant statistically.

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