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MATERNAL SERUM URIC ACID AND CREATININE LEVEL IN NORMAL PREGNANT AND PRE- ECLAMPTIC WOMEN: AN OBSERVATIONAL STUDY.

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Abstract: Pre-eclampsia is a disorder of pregnancy which is characterized by hypertension with proteinuria after 20 weeks of gestation in previously normotensive and non proteinuric pregnant women. Serum creatinine and uric acid has been shown to play a significant role in the pathogenesis of the disease and often precede clinical manifestations. This study compares the serum creatinine and uric acid in pre -eclampsia case and normal pregnant women and to assess its role in pre-eclampsia.
Method:50 Patients diagnosed as having Pre-eclampsia and 50 controls with similar age group were studied at Biochemistry department, RIMS Ranchi.serum uric acid was analyzed by using principle of uricase peroxidase method and serum creatinine was analyzed by using principle of Jaffe method.
Results: The mean serum concentrations of uric acid in preeclamptic pregnant women was significantly higher when compared to normal pregnant women , $p< 0.05$. There was no statistically significant difference for serum creatinine level in preeclamptics compared to normotensive pregnant women($p > 0.05$).
Conclusion: serum uric acid level increased in pre-eclamptic women and there was no significant difference in the Serum creatinine level in preeclampsia patients and healthy pregnant women.

Key words: Pre-eclampsia, Serum creatinine, Uric acid

I. **Introduction:** In Asia Hypertensive disorder accounts for about 12% of maternal mortality.[1] Preeclampsia is defined as hypertension with systolic blood pressure (SBP) ≥140 mmHg and diastolic blood pressure (DBP) ≥90 mmHg after 20 weeks of gestation with proteinuria 1+ on dipstick or ≥300 mg/day.[2] Pregnancy is a normal physiological process which shows many alteration in normal biological and neuroendocrine state.[3] Etiopathogenesis of hypertensive disorders of pregnancy is multifactorial . Serum uric acid and creatinine levels are estimated in pregnant women with hypertension. Their elevated level was due to decreased urinary clearance secondary to reduced GFR

and increased reabsorption.[4] Serum uric acid is marker of severity of disease.[5] Raised levels of serum uric acid and creatinine in hypertensive disorders of pregnancy have adverse effects on maternal and fetal outcomes .[6-8] some studies have documented the range for the both in predicting hypertensive disorders of pregnancy.[5,7] Increased level of uric acid induces endothelial dysfunction and may induce hypertension and vascular disease.[9] Association between elevated serum uric acid levels and preeclampsia was first reported by Slemons and Bogert in 1917.10 It was documented that uric acid rises in about 10th week gestatation, much earlier than the diagnosis of preeclampsia become apparent. There are several proposed mechanisms for elevation of uric acid in the pre-eclampsia, such as abnormal renal clearance, increased tissue breakdown, acidosis and a rise in the activity of the xanthine oxidase / dehydrogenase enzyme[11] Study was done to compare the changes in serum level uric acid level and creatinine level in normal pregnant women and preeclamptic women.

II. Materials and Methods

50 Patients diagnosed as having Pre-eclampsia(case) with age between 18-37 years and 50 as controls with similar age group were studied in department of Biochemistry at RIMS, Ranchi, after taking their consent. Blood samples were collected under aseptic precautions in plain vacutainer for serum uric acid and creatinine estimation. Patients with history of renal disease, chronic hypertension, cardiovascular disease, thyrotoxicosis, liver disease were excluded. Serum samples were analyzed for following parameters by On fully automated autoanalyser (AU 480, BECKMAN COULTER). Uric acid estimation was done by Uricase Peroxidase and creatinine by Jaffe method.

Statistical Analysis:The values of studied parameters are presented as the mean ± SD. A student's unpaired t-test was used for cross sectional comparisons of continuous variables between the 2 groups. The results were considered statistically significant when the probability of the null hypothesis was less than at least 5% ($p < 0.05$).

III. Result

The study was conducted at, RIMS Ranchi, to estimate serum uric acid levels and serum creatinine level in 50 Patients suffering from preeclampsia and in 50 controls. All the statistical calculations were performed by using Computer Software SPSS (Statistical Packages for Social Science) version 20.0

Table 1: Shows the mean serum Uric acid levels in patients and controls

Group	N	Minimum	Maximum	Mean	Std Deviation	P Value
Case	50	2.1	15	5.7	2.5	< 0.01
Control	50	2.4	5.5	3.7	0.84	<0.01

The mean value of serum uric acid in pre-eclamptic pregnant women was significantly elevated than normotensive pregnant women [5.7 ± 2.5 mg/dl vs 3.7 ± 0.84 mg/dl, $p < 0.05$].

Table 2 : Shows the mean serum creatinine levels in patients and controls

Group	N	Minimum	Maximum	Mean	Std Deviation	P Value
Case	50	0.6	3.4	0.80	0.4	<0.05
,Control	50	0.6	0.9	0.66	0.09	<0.05

NS-non significant The mean value of serum creatinine in pre-eclamptic pregnant women was significantly elevated than normotensive pregnant women [0.80 ± 0.4 mg/dl vs 0.66 ± 0.09 mg/dl, $p < 0.05$.

IV. Discussion

In the present study, 74% were primigravidas and 26% were multigravidas. The mean age of our patients was 24±2.4 year with range of 18-37 year and the mean gestational age 36±4.5 years. From table-1, and graph 1 we observed that the mean serum uric acid levels were significantly increased in pre-eclampticwomen in comparison to normal pregnant women, $p < 0.05$. Similar results were observed by other authors. 1 2, 13Hyperuricemia is believed to be resulted from decreased renal excretion as a consequence of pre-eclampsia, also results from increased production secondary to tissue ischemia and oxidative stress.1 2 Further from table 2 and graph 2 we observed that there was no significant difference was observed in creatinine level in pre- eclamptic women as compared to normal pregnant women,$p> 0.05$. Few studies[14,15] observed insignificant change in serum Creatinine level in the two cited groups.

V.CONCLUSION:

It is concluded that serum uric acid rises significantly and serum creatnine level also increases in preclamptic women but not significantly and some previous study also support this but few study showed that there is no correlation. There is need of further study that will conducted on large sample size to established these fact so that these parameter can be used in early diagnosis of pre- eclampsia and prevent maternal and fetal gravies complication, improve maternal and neonatal morbidity and mortality

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