Original Research Paper

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Correlation of Serum Lipid Profile and Uric Acid in Pregnancy Induced Hypertension

Medical Science

KEYWORDS : Uric acid, preeclampsia, lipid profile, HDL

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ABSTRACT

Introduction: *In developing countries, where inadequate prenatal care limits preeclampsia surveillance, maternal mortality is common, accounting for 50 000 deaths per year.*

Material & method: *The study was conducted in the department of Biochemistry, Jhalawar medical college on 50 subjects and 50 controls.*

Result: *There were found a positive correction between Serum TC, TG ,LDL while negative correlation for HDL with Uric acid.*

Conclusion: *serum lipid profile along with uric acid are good predictor for pregnancy inducsed hypertension in preeclampsia.*

Introduction:

Hypertensive disorders complicating pregnancy are common and form one of the deadly triad, along with hemorrhage and infection; that contribute greatly to maternal morbidity and mortality.[1]When the gestational hypertension is accompanied by new-onset proteinuria, the disorder is termed preeclampsia and when not associated with proteinuria, it is called transient hypertension of pregnancy[2] Preeclampsia is a syndrome, universally defined by the onset of hypertension (≥140/≥90_mmHg) and proteinuria (≥0.3_g/24_h) after 20 weeks of gestation in a previously normotensive woman that also may be associated with myriad, other signs and symptoms, and often with subnormal fetal growth[1].

In developing countries, where inadequate prenatal care limits preeclampsia surveillance, maternal mortality is common, accounting for 50 000 deaths per year.[3]Although several hypotheses have been proposed, the causes of preeclampsia remain unclear. There is a relationship between placental insufficiency and the pathophysiology of preeclampsia. Placental oxidative stress plays an important role in the manifestations of preeclampsia.(Postan et al 2004). As such the potential role of abnormal lipid metabolism in the genesis or expression of pre-eclampsia is a subject of increasing interest. Lipid and lipoprotein levels undergo dramatic changes in pregnancy, presumably to supply lipid nutrients to the growing fetus. Plasma concentrations of triglyceride and cholesterol increase approximately 30%and 50%, respectively.[1]

In women with pre-eclampsia, plasma free fatty acids and triglyceride concentrations climb substantially above those observed in normal pregnancy, and do so well before the appearance of clinical manifestations of the disorder.[4]

Elevated uric acid is another component of the preeclampsia syndrome that was recognized many years ago. It is one of the most consistent and earliest detectable changes in preeclampsia and has been cited as a better predictor of fetal risk than blood pressure.5 But till date there were no sufficient data was available for this type of correlation in tribal population , so we were planned a study for correlation between uric acid and lipid profile in the jhalawar region of Rajasthan State in India.

Material and Methods :

The present study was conducted on 50 subjects with pre-eclampsia as well as 50 normal pregnant healthy controls. The study was conducted in the department of Biochemistry, Jhalawar medical college. The subjects were selected from OPD and indoor patients Department of Obstetrics and Gynaecology of SRG hospital, Jhalawar.

Five ml blood was collected in plain vials from the subjects and serum were separated. Then Estimation of serum lipid profile and Uric acid were done by ERBACHEM semi auto-analyzer .

Statically analysis :

The statistical analysis was performed using analysis of variance (ANOVA) test which is confined not only for comparing two sample means, but more than two samples drawn from corresponding controls. The results are expressed as mean ± standard deviation. $P < 0.001$ was considered as statistically highly significant.

Results :

There is a positive correlation and this is a statistically significant ($r = 0.395$, $p < 0.05$) between total cholesterol levels and uric acid. Found a positive correlation and this is a statistically significant ($r = 0.336$, $p < 0.05$) between triglyceride levels and uric acid.. There is a negitive correlation and this is a statistically significant ($r = - 0.397$, $p < 0.05$) between HDL-C levels and Uric acid, There is a poor positive correlation and this is a statistically non- significant ($r = 0.140$, $p > 0.05$) between LDL-C levels and uric acid.

Table No.-1

Correlation between total cholesterol (TC) & uric acid (UA) of Case group Subjects

Correlation	r-value	p-value	Significance
TC v/s UA	+ 0.395	< .05	Sig

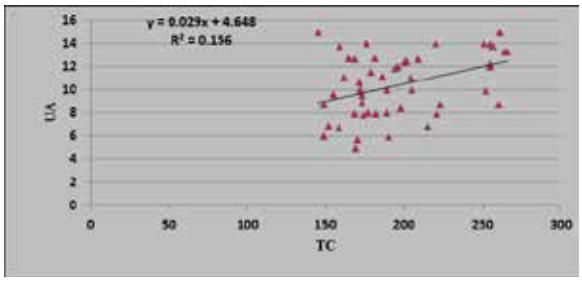


Table No.-2
Correlation between triglyceride (TG) & uric acid (UA) of Case group Subjects

Correlation	r-value	p-value	Significance
TG v/s UA	+ 0.336	< .05	Sig

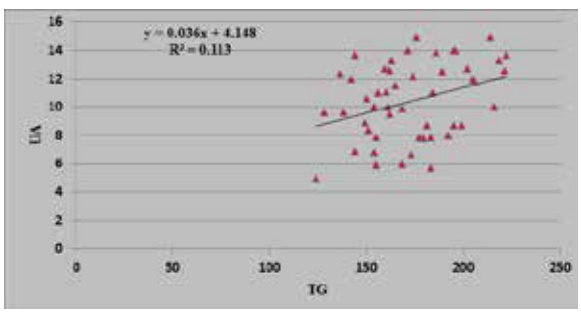


Table No.-3
Correlation between HDL-C & uric acid (UA) of Case group Subjects

Correlation	r-value	p-value	Significance
HDL v/s UA	- 0.397	< .05	Sig

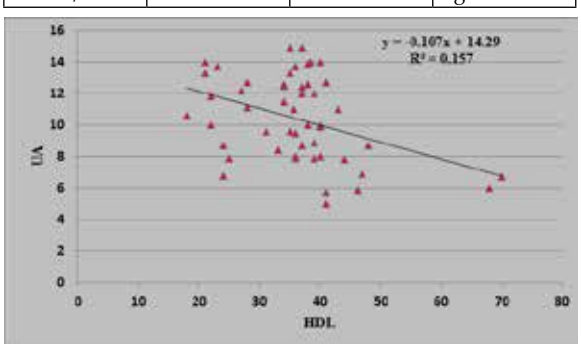
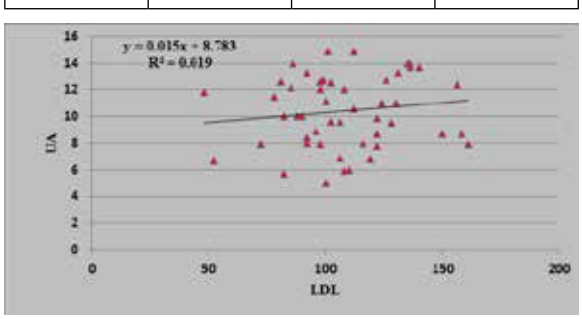


Table No.-4
Correlation between LDL-C & uric acid (UA) of Case group Subjects

Correlation	r-value	p-value	Significance
LDL v/s UA	+ 0.140	> .05	NS



Discussion:

In the present study, cholesterol concentration increased in the patients of pregnancy induced hypertension when compared to women with normal pregnancy, statistically highly significant (P<0.001) elevation in total cholesterol observed. These results are similar with the another study.[6]

In our study also this observation holds true and the rise in serum triglycerides was statistically highly significant (P<0.001) in pregnancy induced hypertensive patients when compared to women with normal pregnancy. This was correlated with the study[7].

In our study, the mean value of HDL-C was about lower in the pregnancy induced hypertensive patients over the pregnant women with normal pregnancy. Statistically the variation was significant (P<0.01). this was in support to the another study.[8]

A study conducted on women with pregnancy induced hypertension reported that there was a significant increase in triglycerides and LDL-C in the patient groups compared to the control.9 In our study we also found highly significant (P<0.001)increase in LDL-C in the patient groups compared to the control

Similarly in this study we were found higher level of uric acid which was supported by this statement - Decreased uric acid clearance from diminished glomerular filtration, elevated tubular reabsorption and decreased secretion.[10]

Hyperuricemia due to oxidative stress is known to be associated with deleterious effects on endothelial dysfunction, oxidative metabolism, platelet adhesiveness, hemorrheology and aggregation.11Hence elevated serum uric acid is highly predictive of increased risk of adverse maternal and fetal outcome.[12]

The understanding of the underlying factors that explain the pathogenesis of PE and the early identification of the patients at risk of the disease will help in the development of preventative or early therapeutic interventions, aimed to reduce the associated morbidity and mortality during pregnancy, but also the long-term severe problems that PE may produce or is associated with.12

Thus, although both uric acid and changes in lipid profile are associated with metabolic syndrome, these conditions could have opposing or perhaps synergistic effects on maternal and fetal health.13

Conclusion :

It can be concluded that serum lipid profile and serum uric acid correlation could be considered as a supportive diagnostic tool in preeclampsia along with other conventional markers.

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