Original Article: Obstetrics

Level of Serum Uric Acid in Gestational Hypertension and Its Relation to Maternal and Fetal Outcome

Nidhi Vardhan[1], Jyoti Malholtra[2]

Abstract

Introduction: Hypertensive disorder are among the common medical disorders during pregnancy and one of the major cause of maternal and perinatal morbidity and mortality world- wide. Early screening for preeclampsia may allow vigilant antenatal surveillance and help in planning for delivery. Uric acid is the final product of purine metabolism oxidation which is mainly excreted in the urine. It is the first and earliest lab parameter for predicting preeclampsia. Serum uric acid not only has predictive role but also plays role in maternal and fetal pathogenesis in PIH

Aims And Objective: Study level of serum uric acid in hypertensive disorder of pregnancy and it relation to maternal and fetal outcome.

Materials And Methods: Study area: Department of Obstetrics and Gynecology, Kurji Holy and Family Hospital ,Patna. Study Population: All antenatal cases with gestation age >28week between 18 year and 35 years of age as per inclusion and exclusion criteria attending the OPD or admitted under OBG Department of Kurji Holy and Family Hospital, Patna, in the study period Nov 2018- Oct 2020 (2 years) Study Design: An observational comparative study. Study population - divided in two groups Group A: Patient with serum uric acid >6 mg/dl .Group B: Patient with serum uric acid ≤6 mg/dl. Sample Size- 150

Results: In our study, in group A had 88 (58.67%) and group B 62 (41.33%)out of 150 patients. No statistical significance was observed between 2 groups regarding age, height, edema, proteinuria, BMI. Significant difference was seen in systolic blood pressure (mmHg) between group A and B. (p value 0.025) Mean ± SD of systolic blood pressure (mmHg) in group A was 152.16 ± 13.85 which was significantly higher as compared to group B (146.77 ± 15.02). Significant difference was seen in diastolic blood pressure (mmHg) between group A and B. (p value 0.037) Mean ± SD of

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diastolic blood pressure (mmHg) in group A was 99.43 ± 8.49 which was significantly higher as compared to group B (96.45 ± 8.7). Significant difference was seen in SGPT (IU/L) between group A and B. (p value <.0001) Mean ± SD of SGPT(IU/L) in group A was 160.83 ± 151.48 which was significantly higher as compared to group B (67.69 ± 75.71). Significant difference was seen in the distribution of gestational age (weeks) between group A and B. (p value 0.002) Gestational age (weeks) was 32-<37 weeks in 51.14% of patients in group A which was significantly higher as compared to group B (25.81%). Significant difference was seen in the distribution of birth weight (gms) between group A and B. (p value 0.012) Birth weight (gms) was 1000-<2500 gms in 48.86% of patients in group A which was significantly higher as compared to group B (25.81%). Proportion of patients with ICU admission and eclampsia was 50.00%, 17.05% respectively in group A which was significantly higher as compared to group B (11.29%, 3.23% respectively). Proportion of patients without any event was 82.26% of patients in group B which was significantly higher as compared to group A (43.18).

Conclusion: In this study it was found that serum uric acid is significantly raised with severity of diseases. It is a useful biochemical marker that reflects the severity and the occurrence of complication of preeclampsia.

Keywords: eclampsia, purine metabolism, uric acid.

Introduction

Hypertensive disorder are among the common medical disorders during pregnancy and one of the major cause of maternal and perinatal morbidity and mortality world- wide. Early screening for preeclampsia may allow vigilant antenatal surveillance and help in planning for delivery. Uric acid is the final product of purine metabolism oxidation which is mainly excreted in the urine. It is the first and earliest lab parameter for predicting preeclampsia. Serum uric acid not only has predictive role but also plays role in maternal and fetal pathogenesis in PIH.[1] Uric acid is a product of purine degradation catalyzed by the enzyme xanthine dehydrogenase / xanthine oxidase (XDH/XO). XDH is converted to its oxidase form XO by several stimuli including ischemia.[2] Uric acid concentration is elevated as early as 10 weeks of gestation, a time much earlier than the clinical presentation. Increased uric acid often precedes clinical manifestations of the disease, including reduced glomerular filtration rate. Uric Acid mg/dL, Non pregnant 2.5 - 5.6 , I trimester-2 - 4.2, II Trimester-2.4 - 4.9, III trimester -3.1 - 6.3.[4] Given the importance of gestational hypertension and associated maternal and neonatal complications in this study, we aimed to investigate the relationship between the level of uric acid with maternal and neonatal complication

Aims And Objective

1. Study level of serum uric acid in hypertensive disorder of pregnancy

2. To study the correlation of maternal and perinatal outcome and severity of disease with serum uric acid

Materials And Methods

Study area: Department of Obstetrics and Gynecology, Kurji Holy and Family Hospital, Patna

Study Population: All antenatal cases with gestation age >28week between 18 year and 35 years of age as per inclusion and exclusion criteria attending the OPD or admitted under OBG Department of Kurji Holy and Family Hospital, Patna, in the study period Nov 2018- Oct 2020 (2 years)

Study Design An observational comparative study

Study population- divided in two groups Group A: Patient with serum uric acid >6 mg/dl. Group B: Patient with serum uric acid ≤6 mg/dl

Sample Size- 150

Results

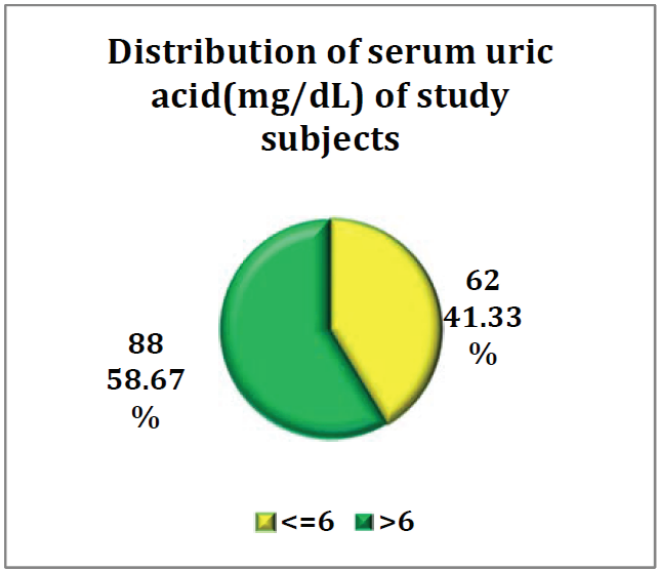

Fig-Distribution of serum uric acid (mg/dl) of study population

A prospective study was conducted in Department of Obstetrics and Gynecology, Kurji Holy and Family Hospital, Patna from Nov 2018-Oct 2020. 150 pregnant women with gestation age>28 weeks who were hypertensive were included in the study. Study population was divided in two groups:-

Group A: Patient with serum uric acid >6 mg/dl

Group B: Patient with serum uric acid <=6 mg/dl

In group A had 88 (58.67%) and group B 62 (41.33%)out of 150 patients

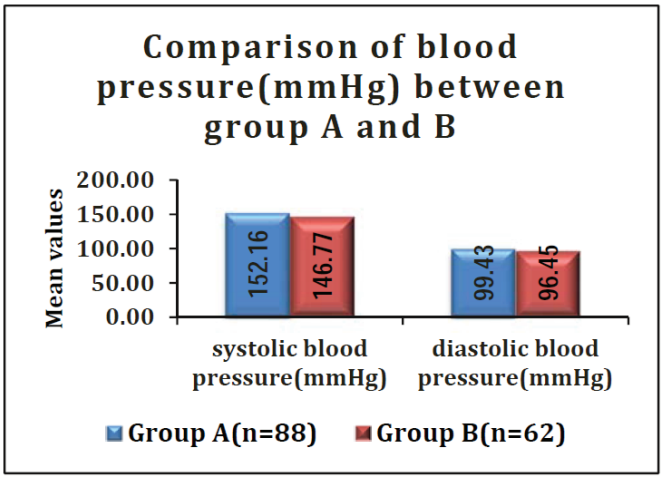

Fig-2-Comparision of blood pressure (mmHg) between group A and B

Significant difference was seen in systolic blood pressure(mmHg) between group A and B. (p value 0.025) Mean ± SD of systolic blood pressure(mmHg) in group A was 152.16 ± 13.85 which was significantly higher as compared to group B (146.77 ± 15.02).

Significant difference was seen in diastolic blood pressure(mmHg) between group A and B. (p value 0.037) Mean ± SD of diastolic blood pressure(mmHg) in group A was 99.43 ± 8.49 which was significantly higher as compared to group B (96.45 ± 8.7).

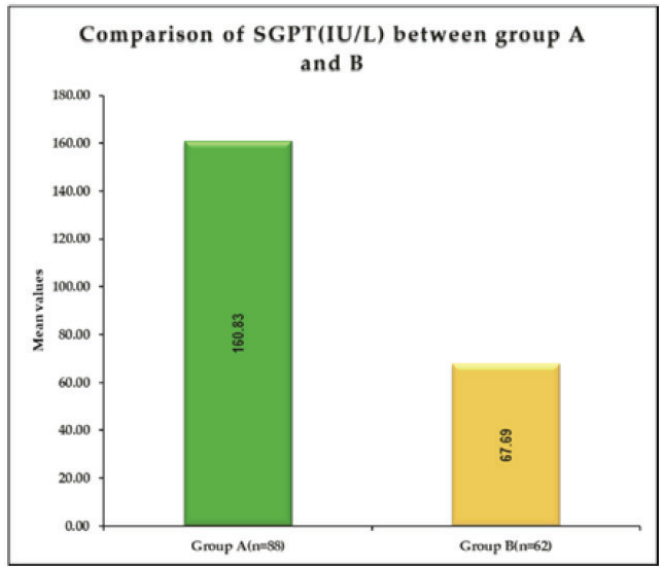

Fig-3-Comparison of SGPT(IU/L) between group A and B

Significant difference was seen in SGPT(IU/L) between group A and B. (p value <.0001) Mean ± SD of SGPT(IU/L) in group A was 160.83 ± 151.48 which was significantly higher as compared to group B (67.69 ± 75.71).

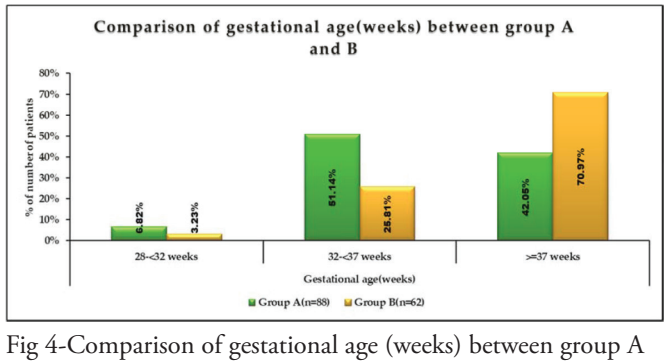

Fig 4-Comparison of gestational age (weeks) between group A and B

Significant difference was seen in the distribution of gestational age(weeks) between group A and B. (p value 0.002) Gestational age(weeks) was 32-<37 weeks in 51.14% of patients in group A which was significantly higher as compared to group B (25.81%)

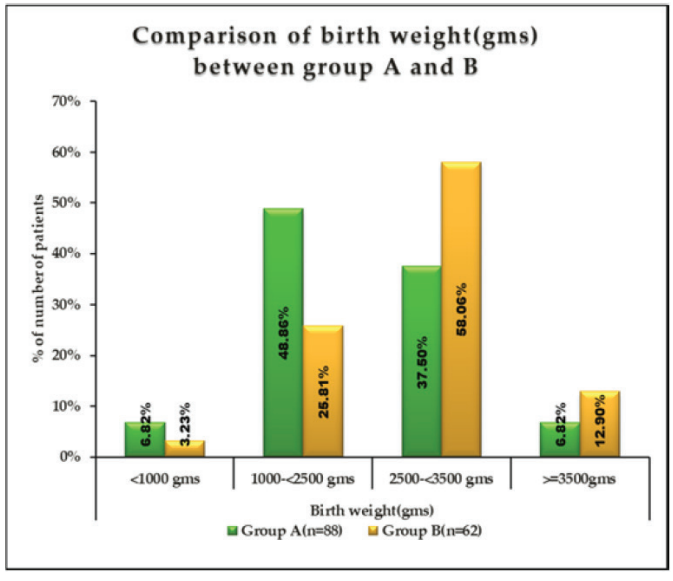

Fig-5: Comparision of birth weight (gm) between group A and group B

Significant difference was seen in the distribution of birth weight (gms) between group A and B. (p value 0.012) Birth weight (gms) was 1000-<2500 gms in 48.86% of patients in group A which was significantly higher as compared to group B (25.81%).

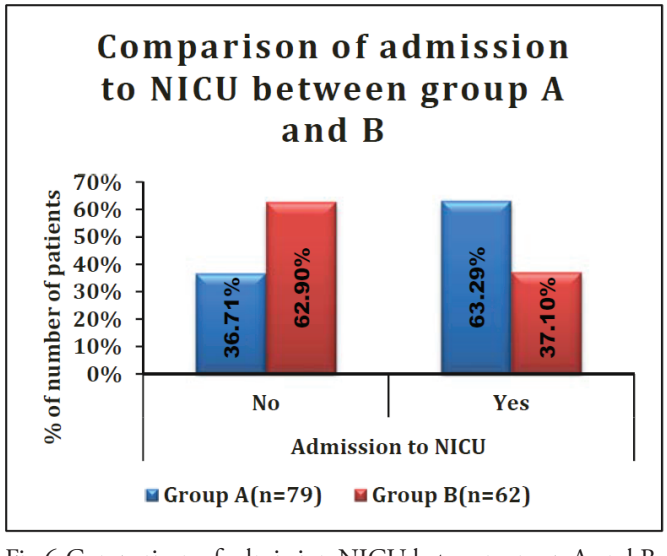

Fig 6-Comparison of admission NICU between group A and B

Significant difference was seen in the distribution of admission to NICU between group A and B. (p value 0.002) Admission to NICU was required in 63.29% of babies in group A which was significantly higher as compared to group B (37.10%)

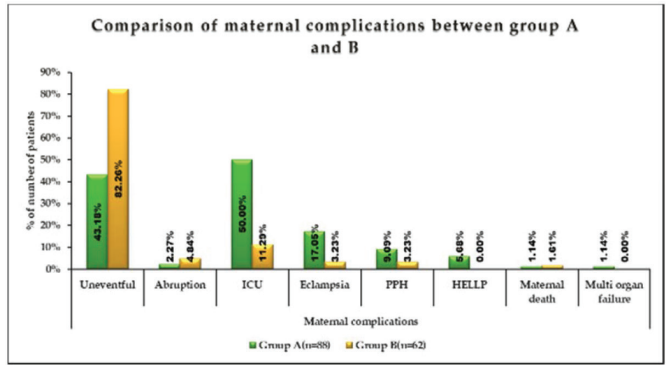

Fig 7-Comparison of maternal complication between group A and B

Proportion of patients with ICU admission and eclampsia was 50.00%, 17.05% respectively in group A which was significantly higher as compared to group B (11.29%, 3.23% respectively). Proportion of patients without any event was 82.26% of patients in group B which was significantly higher as compared to group A (43.18%). Significant difference was seen in the distribution of uneventful (p value <.0001), ICU (p value <.0001), eclampsia (p value 0.009) between group A and B.

Conclusion

In this study it was found that serum uric acid is significantly raised with severity of diseases. It is a useful biochemical marker that reflects the severity and the occurrence of complication of preeclampsia.

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