International Journal of Medical Research Professionals
P-ISSN: 2454-6356; E-ISSN: 2454-6364
DOI: 10.21276/ijmrp

Original Research Article.

Assessment of Serum Albumin Levels in Pregnant Hypertensive Women At a Tertiary Care Teaching Centre

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ABSTRACT

Introduction: Hypertensive disorders in pregnancy are one of the leading causes of maternal and perinatal morbidity and mortality across the world. Hypoalbuminemia is not uncommon in women with the disease state whereas macroalbumiuria is a predictor of adverse pregnancy outcomes in the population. Hence; the present study was undertaken for assessment serum albumin levels in pregnant hypertensive women.

Materials & Methods: A total of 40 pregnant subjects were analysed. Among 40 subjects, 20 were hypertensive while the remaining 20 were non-hypertensive. Complete demographic details of all the patients were obtained. Blood samples were obtained from all the patients and serum albumin levels were assessed using autoanalyzer.

Results: Mean age of the patients of the hypertensive and non-hypertensive group was 59.6 years and 63.2 years respectively. Mean serum albumin levels among the patients of hypertensive and non-hypertensive group was 3.39 gm/dL and 3.68 gm/dL respectively. Significant results were obtained while comparing the mean serum albumin levels among the two study groups.

Conclusion: Hypertensive pregnant subjects are accompanied by significant alterations in serum albumin levels.

Key words: Hypertensive, Serum Albumin.

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Article History:

Received: 23-04-2019, **Revised:** 19-05-2019, **Accepted:** 28-05-2019

Access this article online	
Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2019.5.3.071	

INTRODUCTION

Hypertensive disorders in pregnancy are one of the leading causes of maternal and perinatal morbidity and mortality across the world. It complicates approximately 10% of pregnancies. Incidence has increased by 25% in the United States during the past two decades and estimated maternal deaths are 50,000–60,000 per year worldwide. Proteinuria is one of the common and important features of preeclampsia. Proteinuria ≥300 mg/24 h urine collection or Dipstick reading of 1+ is required for the diagnosis of preeclampsia. However, now there is modification in guidelines and recent recommendation state that it is not the essential component for the diagnosis of preeclampsia.[1-3] Hypoalbuminemia is not uncommon in women with the disease state whereas macroalbumiuria is a predictor of adverse pregnancy outcomes in the population.[4] Hence; the present study was undertaken for assessment serum albumin levels in pregnant hypertensive women.

MATERIALS & METHODS

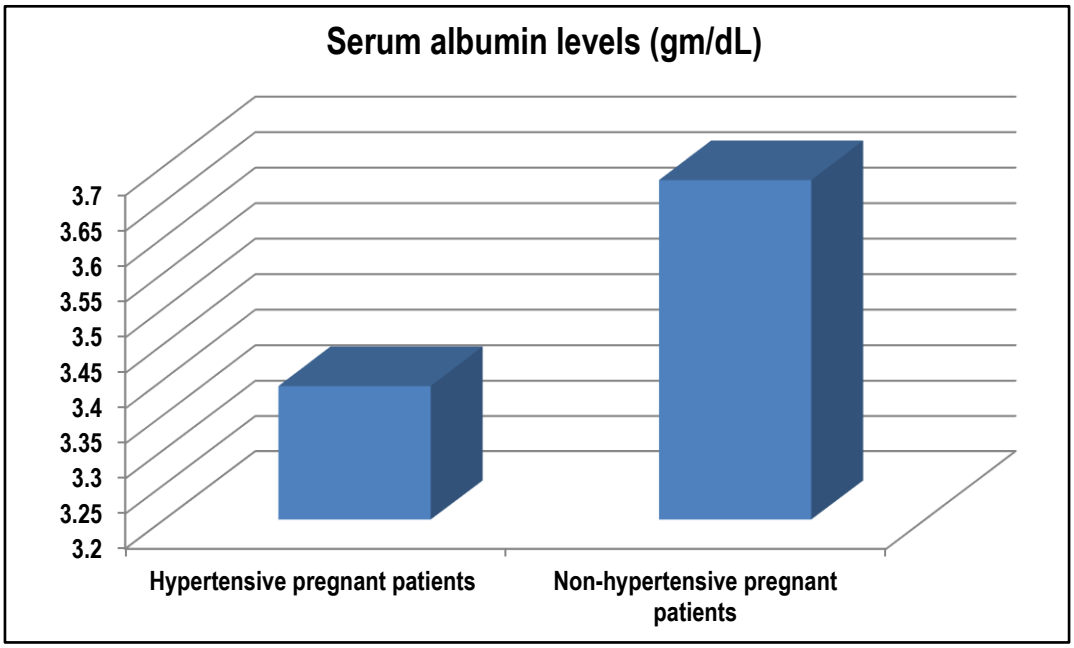
The present study was conducted with the aim of assessing serum albumin levels in pregnant hypertensive women. Ethical approval was obtained from institutional ethical committee. A total of 40 pregnant subjects were analysed. Among 40 subjects, 20 were hypertensive while the remaining 20 were non-hypertensive. Complete demographic details of all patients were obtained. Blood samples were obtained from all patients and serum albumin levels were assessed using autoanalyzer. All the values were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test was used for assessment of level of significance.

Table 1: Demographic parameters

Parameter	Hypertensive pregnant patients	Non-hypertensive pregnant patients
Number	20	20
Mean age (Kg)	59.6	63.2
Mean BMI (Kg/m²)	26.8	26.4

Table 2: Comparison of serum albumin levels

Parameter	Hypertensive pregnant patients	Non-hypertensive pregnant patients	p- value
Serum albumin levels (gm/dL)	3.39	3.68	0.00 (Significant)



Graph 1: Comparison of serum albumin levels

RESULTS

In the present study, a total of 40 pregnant subjects were analysed. Among 40 subjects, 20 were hypertensive while the remaining 20 were non-hypertensive. Mean age of the patients of the hypertensive and non-hypertensive group was 59.6 years and 63.2 years respectively. Mean serum albumin levels among the patients of hypertensive and non-hypertensive group was 3.39 gm/dL and 3.68 gm/dL respectively. Significant results were obtained while comparing the mean serum albumin levels among the two study groups.

DISCUSSION

The systemic vascular dysfunction, which involves the imbalance between constrictors and dilators in the maternal vasculature, hyper-responsiveness to constrictor stimuli, reduced endothelium-dependent dilation, and vascular oxidative stress, is one of the critical pathological mechanisms of preeclampsia. Of these, oxidative stress has been known to be responsible for the morbidity associated with preeclampsia.[5-9]

In the present study, a total of 40 pregnant subjects were analysed. Among 40 subjects, 20 were hypertensive while the remaining 20 were non-hypertensive. Mean age of the patients of the hypertensive and non-hypertensive group was 59.6 years and 63.2 years respectively. Seong WJ et al evaluated the usefulness of serum albumin level as a marker of severity in pregnancy-related hypertension. Of 454 patients with pregnancy-related hypertension who were admitted to Kyungpook National University Hospital between May 1999 and April 2008, the medical records and laboratory tests of 354 patients who met the inclusion criteria for the current study were reviewed. A comparison of the characteristics of each hypertension group and the correlation between serum albumin levels and the time to delivery, 24-h urine protein, and/or pregnancy outcomes were statistically analyzed using SPSS 12.0 (SPSS Korea, Korea). Serum albumin level had a negative correlation with 24-h urine protein (Pearson's correlation coefficient = -0.481) and a positive correlation with time to delivery (= 0.389). Serum albumin ≤3.0 g/dL was highly associated with severe proteinuria (>2 g/day). There were significant differences in maternal or perinatal morbidity as a function of serum albumin level. If serum albumin level fell below 2.5 g/dL, the risks of ascites, hemolysis elevated liver enzyme low platelet (HELLP) syndrome and perinatal mortality significantly increased (odds ratio [OR] and 95% confidence interval [CI]: 3.5 [1.5-8.1], 12 [3.1-45], and 6.1 [1.7-22], respectively). Serum albumin level in pregnancy-related hypertension is a significant

determinant of disease severity and may be considered as a useful marker for predicting time to delivery, severe proteinuria, and pregnancy outcomes.[10]

In the present study, mean serum albumin levels among the patients of hypertensive and non-hypertensive group was 3.39 gm/dL and 3.68 gm/dL respectively. Significant results were obtained while comparing the mean serum albumin levels among the two study groups. Salako BL evaluated the possibility of early prediction of hypertensive disorders of pregnancy using single estimation of serum protein, creatinine and uric in serum samples of healthy primigravidae with singleton pregnancy. Fifty nine healthy normotensive primigravidae with singleton pregnancy who booked for antenatal care and delivered at the University College Hospital, Ibadan had single estimations of their serum albumin, creatinine and uric acid levels at booking before the 20th week of pregnancy. The women were followed up longitudinally throughout pregnancy. Pre-eclampsia occurred in five of the patients (21.7%), two had pregnancy induced hypertension only (8.7%) while 16 remained normotensive (69.6%). The difference in the mean serum concentration of uric acid (0.162 +/- 0.02 mmol/L) and creatinine (93.70 +/- 10.08 micromol/L) respectively were not statistically significant ($p>0.05$). However, the difference in the mean serum albumin levels (4.06 +/- 0.06 versus 3.71 +/- 0.33 gm/dl) was significantly higher in the pre-eclampsia group ($p<0.05$). The predictive performance of these tests was generally low whether alone or in combination. Single estimation of serum uric acid and creatinine levels early in pregnancy are of little value in the prediction of pre-eclampsia.[11]

CONCLUSION

Hypertensive pregnant subjects are accompanied by significant alterations in serum albumin levels.

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Source of Support: Nil. **Conflict of Interest:** None Declared.

Cite this article as: Kiran Malik, Pooja Tripathi Pandey, Abhay Kumar, Arya Des Deepak, Vishnu Kumar, Shwetank Goel, Nidhish Kumar. Assessment of Serum Albumin Levels in Pregnant Hypertensive Women At a Tertiary Care Teaching Centre. Int J Med Res Prof. 2019 May; 5(3):308-10.
DOI:10.21276/ijmrp.2019.5.3.071