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STUDY OF THE CLINICAL RISK FACTOR ASSESSMENT USING GESTOSIS SCORE IN EARLY PREDICTION OF PREECLAMPSIA

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ABSTRACT

Introduction: Hypertensive disorders in pregnancy (HDP) is the spectrum of disorders ranging from already existing chronic hypertension in the index pregnancy to complex multisystem disorder like preeclampsia leading to the complications like eclampsia, HELLP syndrome, acute renal failure, pulmonary edema, stroke and left ventricular failure. Preeclampsia, which affects 5–8% of pregnancies worldwide, is one of the leading causes of maternal and fetal morbidity and mortality.

Aims: The aim of the study is to know the usefulness of Gestosis Score in the early prediction of Hypertensive disorders in pregnancy (HDP)

Materials and Methods: The present study was a Prospective comparative observational study. This Study was conducted from April 2021 to September 2022 at Department of Obstetrics & Gynaecology, Chittaranjan Seva Sadan, College of Obstetrics, Gynaecology and child health.

Result: In our study, higher number of patients had LBW [19 (25.3%)] in group A compared to group B [13 (17.3%)] but it was not statistically significant (p=0.2317).
Conclusion: We found that, significant number of patients from the high-risk group developed thrombocytopenia, elevated transaminases, HELLP and severe hypertension. We also found that risk of IUGR and number of SNCU admission were much higher in group A
Keywords: HELLP, Hypertensive disorders in pregnancy, SNCU and chronic hypertension.

INTRODUCTION

Hypertensive disorders in pregnancy (HDP) is the spectrum of disorders ranging from already existing chronic hypertension in the index pregnancy to complex multisystem disorder like preeclampsia leading to the complications like eclampsia, HELLP syndrome, acute renal failure, pulmonary edema, stroke and left ventricular failure. Preeclampsia, which affects 5–8% of pregnancies worldwide, is one of the leading causes of maternal and fetal morbidity and mortality.

The National Eclampsia Registry (NER) FOGSI -ICOG interim statistics reveals that the incidence of hypertensive diseases during pregnancy to be high with a substantial incidence of eclampsia. The incidence may be higher because many eclampsia cases which are managed by peripheral health workers remain unreported. Incidence of preeclampsia was found to be 10.3% (NER 2013). The incidence of eclampsia is 1.9% out of which more than 50% of the cases are antepartum, and approximately 13% of the cases occurred post-partum. Maternal Mortality attributed to eclampsia is 4-6 %.

The 2019 National Institute for Health and Care Excellence (NICE) guidelines classify a woman at high risk of preeclampsia if there is a history of hypertensive disease during a previous pregnancy or a maternal disease including chronic kidney disease, autoimmune diseases, diabetes, or chronic hypertension. Women are at moderate risk if they are nulliparous, 40 years of age, have a body mass index (BMI) -35 kg/m2 , a family history of preeclampsia, a multifetal pregnancy, or an inter- pregnancy interval more than 10 years.

Despite extensive clinical and basic research on HDP in the last few decades, the real etiology and pathophysiology remain unclear [1]. According to the latest recommendations from the International Society for the Study of Hypertension in Pregnancy (ISSHP), HDP includes pregnancy complicated by chronic hypertension (high blood pressure before pregnancy or increased blood pressure before a gestational age of 20 weeks) and new-onset hypertension [gestational hypertension (GH) or preeclampsia (PE)]. PE and GH are the major components of HDP; their worldwide incidences are approximately 1.8–4.4% and 0.2–9.2%, respectively, with a fair amount of regional and seasonal differences [2,3]. HDP increases the long-term risk of cardiovascular diseases in pregnant women. Many studies have shown that the incidence of cardiovascular diseases in HDP patients is 2 times higher than that in normal pregnant women. The occurrence of chronic hypertension in HDP patients is 1.5 times higher than that in normal pregnant women. PE is an independent risk factor for the subsequent hypertension. Basal blood pressure and the long-term incidence of cardiovascular diseases are higher in children born by

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pregnant women with hypertension [4]. The personal and social burden caused by HDP is very serious.

MATERIALS AND METHODS

Study site: Department of Obstetrics & Gynaecology, Chittaranjan Seva Sadan, College of Obstetrics, Gynaecology and child health.

Study design: A Prospective comparative observational study.

Period of study: April 2021 to September 2022

Selection Criteria ˆ

Inclusion Criteria –

- All the Pregnant women of Gestational age 6 weeks to 20 weeks

Exclusion Criteria –

- The patients who are not willing to give consent to the study.

As per inclusion and exclusion criteria, the patients were included in the study after counselling. Valid written informed consent was taken in the patient's native language. All the patients included in the study were screened and assessed using HDP Gestosis score. Total 150 patients were selected and equally divided into two groups. When the total score is >/=3, that woman is marked as 'at risk' for HDP. The patients who are found to be 'At risk'(total 75) were categorised into group A and were started on T. Aspirin 75mg OD as per WHO guidelines 2019. Rest 75 patients were marked as group B (control group) whose gestosis score was <3 .All patients were followed up till delivery by routine antenatal check-ups at regular interval and investigations (blood investigations+ultrasonography) to detect end organ damage in mother and for fetal surveillance. The result was compared using statistical analysis.

RESULT AND DISCUSSION

The present study was a Prospective comparative observational study. This Study was conducted from April 2021 to September 2022 at Outpatient department, In-patient department & labour ward in the Department of Obstetrics & Gynaecology, Chittaranjan Seva Sadan, College of Obstetrics, Gynaecology and child health, Kolkata. Total 150 patients were included in this study.

The importance of age and its association with high risk factors is evident from the fact that more patients of age >35 years were present in group A [10 (13.3%)] as compared to group B [2(2.7%)]. Patients below 19 years were more in group B, [27 (36.6%)] as compared to group A [21 (28.0%)] .In the middle age group the distribution of patients were almost same, 44 (58.7%) patients in group A and 46 (61.3%) patients in group B.

We found that, most of the patients were Primi gravida [46 (61.3%)] in group A compared to group B [39 (52.0%)], which is similar to Riaz et al [5] study, which showed 60 % were primigravida but this was not statistically significant (p=0.2487).

Our study showed that, a greater number of patients had Urine dipstick Trace [49 (65.3%)] in group B compared to group A [38 (50.7%)] and we also found that in group A [13 (17.3%)] patients had Urine dipstick3+ and in group B, [6 (8.0%)] patients had Urine dipstick3+ which was statistically significant (p=0.04288). Baweja et al suggest that measuring urinary albumin

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using high-performance liquid chromatography in an early and uncomplicated pregnancy, spot urinary albumin:creatinine ratio (ACR) values are higher. If measured early in the second trimester, an ACR of 35.5 mg/mmol or higher may predict preeclampsia before symptoms arise. [6]

Most of the patients had termination by vaginal delivery [53 (70.7%)] in group A compared to group B [51 (68.0%)] it was not statistically significant (p=0.7232).

It was found that, majority number of patients had Severe Hypertension [40 (53.3%)] in group A compared to group B [26 (34.7%)], it was statistically significant (p=0.02128) similar to study done by Magee et al85 where severe hypertension (≥160/110 mm Hg) developed in 40.6% of the women in the less-tight-control group and 27.5% of the women in the tight-control group (P<0.001).

In our study we found that more patients had [14 (18.7%)] Eclampsia in group A compared to group B [8 (10.7%)] which was not statistically significant (p=0.1661).

But more patients had HELLP [8 (10.7%)] in group A compared to group B [1 (1.3%)] which was statistically significant (p=0.0161).

The study also showed that, more patients developed abruption [3 (4.0%)] in group A as compared to group B [1 (1.3%)] although it was not statistically significant (p=0.3107).

Only 3 patients had Pulmonary Edema in group A (p=0.0801), and 1 maternal death occured in group which was not statistically significant either (p=0.3156).

In our study, we observed that, fewer patients had IUFD [1 (1.3%)] in group B compared to group A [3(4.0%)] but this was not statistically significant (p=0.3107) and SNCU admission was significantly higher in group A [27 (36.0%)] as compared to group B [21 (28.0%)], (p=0.0293).

In our study, higher number of patients had LBW [19 (25.3%)] in group A compared to group B [13 (17.3%)] but it was not statistically significant (p=0.2317).

Most of the patients had IUGR [15 (20.0%)] in group A compared to group B [5 (6.7%)] it was statistically significant (p=0.0163). Although the study objectives were different, in CHIPS trial86, a total of 17.9% babies were IUGR, tight control group had 19.8% and less tight control had 16.1% of IUGR babies, there was no significant association between two groups.

The mean booking SBP (p=0.1898) and booking DBP (p=0.1159) were not statistically significant with both groups (p=0.1898).

We found that, the mean transaminases were significantly deranged in group A. The mean AST was more [121.4000± 172.5254] in group A compared to group B [44.0667± 59.2136] which was statistically significant (p=0.0003). The mean ALT was more [123 .1333± 172.8054] in group A compared to group B [55.2533± 79.9730] which was also statistically significant (p=0.0024). The result is similar to other studies like, Girling et al[7] found that prevalence of elevated liver function tests was significantly higher in the pre-eclampsia group (54%), Sudha Patil et al[8], Bibi Munazza et al[9] also demonstrated rise in liver enzymes in preeclampsia. The elevated transaminases were probably due to hypervascularization and vasoconstriction of liver leading to cell injury, alteration of membrane permeability and damage to hepatocytes.

The mean Platelet count was lower [2.2240± .6324] in group A compared to group B [2.9413± 2.7266] and it was statistically significant (p=0.0280). According to Mc Crae et al [10], thrombocytopenia affects up to 50% of women with preeclampsia and our study support that. Anaemia during pregnancy is a major public health problem, especially in developing countries. It affects 41.8% of pregnant women globally, with the highest prevalence in India.In the current study, the mean Hb was lower [9.0867± .9922] in group A compared to group B [10.1800± 1.8349] it was statistically significant (p=0.0252). Majority patients developed anaemia in group which is similar to the study done by Ali AA et al [11].

Our study shows that the mean urea was more [19.9200± 3.3360] in group A compared to group B [16.8933± 1.6812] which was statistically significant (p<0.0001), the mean creatinine was more [.8200± .2676] in group A compared to group B [.5333± .1166] which was also statistically significant (p<0.0001). There is an increased risk of derangement of renal function test with hypertensive disorder of pregnancy, according to studies by Sadia et al [12].

The Apgar score at 5 min is considered a better predictor of neonatal long-term outcome. We found that the mean Apgar was lower [7.5067± 2.0227] in group A compared to group B [7.8933± 1.3811] but this was not statistically significant (p=0.1736).

CONCLUSION

- From our study it is obvious that risk stratification according to Gestosis Score is a significant method of screening high risk patients prone to develop severe HDP. However, its impact on maternal and perinatal morbidity and mortality is variable which is clearly shown in discussion and summary.
- In our study we found that significant number of patients from the high-risk group developed thrombocytopenia, elevated transaminases, HELLP and severe hypertension. We also found that risk of IUGR and number of SNCU admission were much higher in group A.

  But there were little or no association between the high risk patients and development of eclampsia, pulmonary edema, placental abruption ,maternal death and IUFD.

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Table: Association between Urine Dipstick: Group

Urine dipstick	Group A	Group B	TOTAL	p-value	Chi-square value
Deranged	37	26	19	0.03326	6.0726
Normal	38	49	87		
TOTAL	75	75	150		

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Table: Association between Mode Of Termination: Group

Group					
Mode Of Termination	**Group A**	**Group B**	**Total**	**p-value**	**Chi-square value**
LSCS	22	24	46	0.7232	0.1254
Row %	47.8	52.2	100.0		
Col %	29.3	32.0	30.7		
VD	53	51	104		
Row %	51.0	49.0	100.0		
Col %	70.7	68.0	69.3		
Total	75	75	150		
Row %	50.0	50.0	100.0		
Col %	100.0	100.0	100.0		

Table: Association between Gravida: Group

Group					
Gravida	**Group A**	**Group B**	**Total**	**p-value**	**Chi-square value**
Multigravida	29	36	65	0.2487	1.3303
Row %	44.6	55.4	100.0		
Col %	38.7	48.0	43.3		
Primigravida	46	39	85		
Row %	54.1	45.9	100.0		
Col %	61.3	52.0	56.7		
Total	75	75	150		
Row %	50.0	50.0	100.0		
Col %	100.0	100.0	100.0		

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Table: Distribution of Hb: Group

		Number	Mean	SD	Minimum	Maximum	Median	p-value
HB	**Group A**	75	9.0867	.9922	7.2000	12.0000	10.0000	0.0252
	Group B	75	10.1800	1.8349	7.8000	11.0000	10.0000	