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Original Research Article

A Descriptive study of residual hypertension and biochemical changes following post-partum period of pre-eclampsia & eclampsia presenting women

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Abstract: Hypertensive disorders of pregnancy poses a challenge for the treating doctors. They usually resolve after delivery but sometime may persists.The objective of this study is to find out residual hypertension & biochemical changes in postpartum period in Pre-eclampsian & Eclampsian patients. This study was a hospital based case control analytical type of observational study conducted in Dept. of Obs. & Gynae, SMS Medical College, and Jaipur from August 2014 to august 2015. Women delivering at S.M.S. Medical College and Attached Group of Hospitals, Jaipur were selected for the study. After considering the inclusion and exclusion criteria all the subjects were recruited in the study and well informed written consent was taken from all patients. They were subjected to detailed history taking, complete general physical examination, systemic examination and obstetric examination was done, all routine investigations blood biochemistry were done. Four readings of BP and blood biochemistry were taken at admission, 24 hrs post-delivery, and 1 week and 42 days postpartum, and the results were analysed.Analysis was carried out on data for 230 patients. The mean age of patients were 24.49 ± 3.53 with most of the patients being primigravidae. The postpartum period was uneventful with no significant difference in mode of delivery. 30.43% patients showed presence of residual hypertension at 42 days of postpartum with mean SBP of 127.05 ± 11.04. The mean rise in Hb form basal value was 0.22 ± 2.42 while TLC showed a fall from its basal value with a mean of 7.5 ± 4.44. The mean change in serum urea and serum creatinine from basal to 42 days was 10.60 ±7.30 and 0.40±0.21. The mean change in serum direct and indirect bilirubin from basal to 42 days was 0.25±0.32 and 0.32±0.40. All the above changes were statistically. Pre-eclamptic and eclamptic women have significant amount of residual hypertension. Marked biochemical changes occur in postpartum period, most of the deranged parameters get normalized within 42 days. Estimation of blood pressure and blood biochemistry is an easy tool for assessment of postpartum hypertension and its management which can be done even in rural settings, and thus can have a significant impact on maternal and perinatal outcome.
Keywords: Eclampsia, Pre-Eclampsia, BP

INTRODUCTION

Hypertensive disorders of pregnancy are the most common complication in pregnancy and together they form one member of the deadly triad, along with haemorrhage and infection that contribute greatly to maternal morbidity and mortality rates [1]. Pre-eclampsia is defined as blood pressure >140/90mmHg after 20 weeks of gestation[2]. Proteinuria > 300mg/24 hr or >1+dipstick increases the certainty of pre-eclampsia. More biochemical derangements seen are serum creatinine >1.2mg% unless known to be previously elevated, platelets<1lac/ml, increased serum transaminase levels. Microangiopathic haemolysis with increased LDH is also seen. Persistent headache with other cerebral or visual disturbances, persistent epigastric pain are common symptoms. Eclampsia is defined as a seizure that cannot be attributed to other causes in a woman with pre-eclampsia[2]. Postpartum hypertension is defined as blood pressure 140/90mmHg measured twice 4 hours apart between delivery and at 6 week postpartum[3].

Hypertension can persist from pregnancy or present de novo in the postpartum period. These risks are magnified as many patients present after hospital discharge and go unrecognized because of decreased medical surveillance after delivery. Potential causes of Postpartum Hypertension are:

1. Chronic hypertension 2. Gestational hypertension 3.Preeclampsia unresolved with delivery.

The incidence of postpartum preeclampsia is 6%. A recent study revealed that excessive placental secretion of soluble fms like tyrosine kinase-1 may contribute to pre-eclampsia [4-8].

The high incidence of eclampsia in our country is mostly due to malnutrition, ignorance, lack of adequate health education and medical care. The socioeconomic conditions of the nation and the availability of the prevailing obstetric care have a remarkable bearing on the incidence of this disease and on the maternal and perinatal loss. Hence the main aim of this study was to find out the residual hypertension and biochemical changes in this high risk group and manage it timely.

METHODS

The present study was a hospital based descriptive study. It was conducted in the Department of Obstetrics and Gynaecology, S.M.S. Medical College and Attached Group of Hospitals, Jaipur from April 2014 to March 2015. This study comprised of women delivering at S.M.S. Medical College & Hospitals, Jaipur. 230 women (as per selection criteria) were recruited in the study. Written informed consent by each subject was sought before the study. Sample Size has been calculated, statistically, at 95% confidence level assuming residual hypertension in 33% of patients of Pre-eclampsia & Eclampsia, at relative allowable error of 20%.Selection Criteria: A .Inclusion Criteria: Hypertensive women with Pre-eclampsia and Eclampsia**,** Singleton pregnancy**,** Term gestation(37weeks-42weeks of gestation)**,**Age group20-35 years**,** Women who were willing and giving consent to participate in the studyB. Exclusion Criteria; Multifetal pregnancy, Pregnancy with essential hypertension, Molar pregnancy, Patient with chronic renal disease, diabetes & thyroid disorder, Preterm delivery or post-dated delivery.

Patients were subjected to detailed history taking, complete general physical examination, systemic examination and obstetric examination was done, all routine investigations blood biochemistry were done. Four readings were taken at admission, 24 hrs. Post-delivery, and 1 week and 42 days postpartum. And the results were analysed.

Blood pressure measurement was done by using a mercury sphygmomanometer in supine position. For haematological parameters (Hb%, total leucocytes count, total platelets count) blood samples were collected in EDTA tubes. For blood biochemistry samples (blood urea, serum uric acid, serum creatinine, serum bilirubin, SGOT and SGPT) were taken in plain tube.

The subjects were pregnant women clinically diagnosed as pre-eclampsia and eclampsia during their third trimester with term pregnancy between the ages 20-35 years. The demographic details such as age, residence, education, religion and socio economic status were noted. Patients were considered hypertensive if DBP was ≥90mmHg on two occasions, four hours apart or a single reading of 110mmHg. Cases with SBP ≥ 140mmHg and DBP ≥ 90mmHg, with proteinuria >300mg/24hours or >1 dipstick were considered as pre-eclampsia. Presence of headache, visual disturbances, epigastric pain, oliguria, elevated LFT, elevated RFT, thrombocytopenia were classified as severe pre-eclampsia and occurrence of seizure with other sign and symptoms of pre-eclampsia as eclampsia. The person maintaining the observations were blinded from the changes in the BP. Patients were treated accordingly. The cases delivered in the hospital and observations were also made regarding mode of delivery, postpartum hypertension and blood biochemistry. Hemoglobin was measured by Sahli's method while TLC and TPC by: Neubauer's chamber method and differential leucocyte count by blood film.

Biochemistry analysis was done by following methods -Random/fasting/postprandial blood glucose, Serum Creatinine by alkaline picrate method of Jaffe's reaction, Serum Electrolytes(Na+/k+/Cl-),Total and direct bilirubin, SGOT, SGPT by Syncron CX5 auto analyser

STATISTICAL ANALYSIS:

*Qualitative data was expressed in the form of proportion.*Quantitative data was expressed in mean ±Sd.

RESULTS

Analysis was carried out on data for 230 patients. Estimation of blood pressure, urine albumin and sugar, CBC, LFT and RFT were done. Data was analysed and residual hypertension and biochemical changes were determined.

Table 1: Mean + SD and p-value of Blood Pressure at different time interval

SBP	**Interval**		
	Basal	**At 24 hrs**	At 42 days
Mean + Sd	152.52 + 13.95	138.75 + 15.42	127.05 + 11.04
Mean Change + Sd		13.77 + 15.08	25.47 + 15.30
DBP	99.30 + 10.08	89.12 + 9.07	84.01 + 5.50
Mean Change + Sd		10.18 + 11.30	15.29 + 10.61

Table 2: Mean + Sd and p-value of blood biochemistry at different time interval

	Interval		
	Basal	**At 24 hrs**	**At 42 days**
TLC	14.06 + 4.03	10.70 + 3.03	6.30 + 2.74
Mean Change + Sd		3.11 + 3.94	7.51 + 4.44
Plate late counts	1.67 + 0.96	1.50 + 0.92	1.99 + 0.89
Mean Change + Sd		0.17 + 0.16	0.32 + 0.36
Urea	24.40 + 7.28	21.36 + 7.76	13.80 + 5.41
Mean Change + Sd		3.04 + 7.86	10.60 + 7.30
S. Cr	0.82 + 0.20	0.71+ 0.23	0.42 + 0.19
Mean Change + Sd		0.10 + 0.17	0.40 + 0.21
SGOT	112.39 + 144.67	84.03 + 102.50	35.73 + 27.11
Mean Change + Sd		28.36 + 75.02	76.66 + 134.27
SGPT	83.08 + 119.77	67.34 + 93.82	34.06 + 34.54
Mean Change + Sd		15.74 + 56.79	49.02 + 110.55
SB Direct	0.55 + 0.35	0.41+ 0.21	0.30 + 0.14
Mean Change + Sd		0.13 + 0.23	0.25 + 0.32
SB Indirect	0.61 + 0.32	0.54 + 0.28	0.28 + 0.21
Mean Change + Sd		0.06 + 0.34	0.32 + 0.40
Uric Acid	4.78 + 0.32	4.70 + 0.34	4.29 + 0.36
Mean Change + Sd		0.08 + 0.25	0.49 + 0.41
BS	77.54 + 18.82	81.83 + 12.64	84.34 + 15.52
Mean Change + Sd		-4.29 + 19.74	-6.80 + 28.30
Na^+	139.39 + 4.63	139.75 + 4.19	138.22 + 3.36
Mean Change + Sd		-0.36 + 3.84	1.17+ 5.69
K^+	4.59 + 1.04	4.70 + 0.49	4.58 + 0.38
Mean Change + Sd		-0.11 + 1.22	0.01 + 1.148
Cl^-	103.41+ 5.60	103.61 + 3.72	102.38 + 3.95
Mean Change + Sd		-0.20 + 6.41	1.03 + 7.08

Salient features of the present study were:

1. The mean age of patients was 24.49±3.53. No correlation was found between age and occurrence of postpartum hypertension. The primi patients form the major bulk (58.26%) of this study as primi patient is at high risk for developing of hypertension.
2. The urban population constituted major part of the study and maximum subjects were Hindus. The majority of study population was of lower middle socio-economic status. These patients were largely literate and had good antenatal care.
3. The maximum study population had reached the 38 weeks of gestation. Out of 230 patients 166(72.17%) were having pre-eclampsia and 64(27.83%) were having eclampsia. No significant difference was found between modes of delivery. The postpartum period was uneventful in most of the patients.
4. The presence of residual hypertension in pre-eclamptic and eclamptic patients in postpartum period at 42 days was 70(30.43%), mean+SD of SBP was 127.05 + 11.04 & mean+S.D of DBP was 84.01 + 5.50.
5. The mean change ±Sd of Hb from basal value to 42days was 0.22 + 2.42 this rise in Hb from basal value to 24 hrs was statistically highly significant as p-value was <.001.
6. The mean change in Total Leucocyte Count from basal to 42 days was 7.51±4.44 this fall in TLC was also found statistically highly significant that is p<.001. similarly the mean change in TPC from basal to 42 days was 0.32 ± 0.36 this fall in TPC was also found statistically highly significant that is p<.001.
7. The mean change in serum urea from basal to 42 days was 10.60±7.30 this fall in serum urea was also found statistically highly significant that is p<.001. the mean change in serum creatinine from basal to 42 days was 0.40±0.21 this fall in serum creatinine was also found statistically highly significant that is p<.001* The mean change in serum SGOT and serum SGPT from basal to 42 days was 76.66±134.27 and 49.02±110.55 this fall in serum SGOT and SGPT was also found statistically highly significant that is p<.001
8. The mean change in serum direct and indirect bilirubin from basal to 42 days was 0.25±0.32 and 0.32±0.40 this fall in serum direct and indirect bilirubin was also found statistically highly significant that is p<.001.

9. The mean change in serum uric acid from basal to 42 days was 3.06±1.61 this fall in serum uric acid was also found statistically highly significant that is p<.001. The mean change in blood sugar from basal to 42 days was -6.80±28.30 this rise in blood sugar was also found statistically highly significant that is p<.001.
10. The mean change in serum sodium level from basal to 42 days was 1.17±5.69, this fall in blood sodium level was also found statistically highly significant that is p<.001 the mean change in serum potassium level from basal to 42 days was 0.01±1.148 this fall in serum potassium level was found statistically not significant as the p-value is >.05 . the mean change in serum chloride level from basal to 42 days was 1.03±7.08 this fall in serum chloride level was also found statistically not significant as the p-value is >.05 .

DISCUSSION

Our study showed that significant residual hypertension persist in pre-eclamptic & eclamptic patients associated with increased maternal morbidity .30% Residual hypertension persist in pre-eclamptic & eclamptic patients with biochemical derangements. Many previous studies also had same results [9- 13].

CONCLUSION

Pre-eclamptic and eclamptic women has significant amount of residual hypertension. Marked biochemical changes occurs in postpartum period, most of the deranged parameters get normalized. Thus, the estimation of blood pressure and blood biochemistry can be an easy tool for an early, economical and rapid procedure of assessment of postpartum hypertension and its management which can be done even in rural hospitals. Thus this can have a significant impact on maternal and perinatal outcome.

Further study is suggested and for others ideal and clinical useful screening test for the identification of postpartum residual hypertension and the prediction of the severity thereby helping policy makers, planner and practitioners in predicting and managing postpartum hypertension.

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