ORIGINAL ARTICLE

Frequency of Coagulopathy in Hypertensive Disorders of Pregnancy

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ABSTRACT

Aim: To determine the frequency of coagulopathy in patients of hypertensive disorders in pregnancy at tertiary care hospital.
Methods: The study was conducted at Department of Obstetrics and Gynaecology, Unit-II, Nishtar Hospital, Multan during 15th November 2015 to 15th May 2016. A purposive sample of 132 women with gestational hypertension/ preeclampsia/ eclampsia, parity 0-4, gravida 1-5, gestational age >20 weeks were included in the study. Patients having known cases of chronic hypertension, pre pregnancy bleeding disorder and amniotic fluid embolism were not included in the sample.
Results: Patients arriving in antenatal clinic, labour room at gynaecology department of Nishtar Hospital fulfilling the inclusion and exclusion criteria were enrolled for the study. Collected primary data was analyzed and it was observed that different factors such as: age varied from 20 to 40 years with mean age:29.090±3.84 years, mean gestational age: 28.000±2.87 weeks, mean PT: 9.530±3.82 seconds, mean APTT: 33.401±5.33 seconds, mean INR: 1.105±0.24, mean platelets: 203.765±78.91X10^9/L and mean Serum Fibrinogen was turned out to be: 241.045±60.08 mg/dL. Majority of the women were with pregnancy induced hypertension: 68.2%, while women with preeclampsia were 19.7% and with eclampsia were observed to be: 12.1%. Also, Coagulopathy was observed in 12.1% of patients.
Concluded: Risk of coagulopathy increases with the development of eclampsia and as a result it will help to identify patients who may have chances of developing coagulopathy and these patients require immediate referral so as to reduce maternal and perinatal mortality and morbidity rates.
Keywords: Hypertensive disorders; Pregnancy; Coagulopathy.

INTRODUCTION

Coagulopathy is characterized by the widespread activation of coagulation which results in intravascular formation of fibrin and ultimately thrombotic occlusion of small and midsize vessels[1]. Intravascular coagulation can compromise the blood supply to organs and in conjunction with hemodynamic and metabolic derangement, may contribute to failure of multiple organs with concomitant consumption of platelets and coagulation factors that may result in clinical bleeding[2]. Intravascular coagulopathy may be accompanied with many obstetrical complications such as abruptio placentae, amniotic fluid embolism, preeclampsia and eclampsia with HELLP syndrome leading to high mortality and morbidity[3]. Early detection of the cause is important for adequate and prompt management in order to reduce mortality and morbidity both to the mother and fetus[4].

The objective of the study is to determine the frequency of coagulopathy in patients of hypertensive disorders in pregnancy at tertiary care hospital.

MATERIALS AND METHODS

In order to obtain desired data, Department of Obstetrics and Gynaecology, UNIT II of Nishtar Hospital, Multan was selected. For this purpose required information on specific parameters were collected from a purposive sample (size n=132) of pregnant women during the period from 15th November 2015 to 15th May 2016. Non –Probability sampling design i.e. "purposive sampling was used and sample size was determined by applying the formula using "Q" as confidence level (95%), "D" as the margin of error (0.08) and Prevalence (P = 0.32).

Inclusion criteria

- The pregnant women of reproductive age i.e., between 20 to 40 years of age.
- Gestational hypertension/Preeclampsia/Eclampsiaas defined per operational definition.
- Parity 0-4.0.
- Gravida 1-5.
- The gestational age >20 weeks assessed by LMP

Exclusion criteria

- Known case of Patients with chronic hypertension.
- Known case of Pre pregnancy bleeding disorder.
- Known case of Patients with amniotic fluid embolism.

Data Collection Procedure: A specialized performa had been developed to record the finding of this study by the researcher. Permission from ethical committee of the institution was taken before the start of the study. Patients coming to the antenatal clinic, labour room and gynaecology and obstetrics department of Nishtar Hospital fulfilling the inclusion and exclusion criteria were enrolled for the study. Informed consent was taken from all patients for carrying out coagulation profile and significance of tests performed was explained to patients taking part in the study. Detailed history was taken of the patients fulfilling the inclusion criteria. Blood Pressure was measured by sphygmomanometer. Patients were under went coagulation profile and results were noted. All data was entered in performa.

Data Analysis: The data was edited and analyzed in computer software SPSS version 20. Descriptive statistics

analysis wasconducted to calculate mean and standard deviation for the age, gestational age, PT, APTT, INR, serum fibrinogen and platelet count. Frequency and percentages were also calculated for categorical variables like coagulopathy, pre-eclampsia, eclampsia and gestational hypertension. Effect modifiers like age, gestational age, gravidity, parity and obesity were controlled by stratification. Post stratification chi-square test was applied to see its effect on outcome variables. P value equal or less than 0.05 was considered as significant.

RESULTS AND DISCUSSION

Age range in this study was from 20 to 40 years with following results were observed such as: mean age of 29.090±3.84 years, mean gestational age 28.000±2.87 weeks, mean PT 9.530±3.82 seconds, mean APTT 33.401±5.33 seconds, mean INR 1.105±0.24, mean platelets 203.765±78.91X10^9/L and mean Serum Fibrinogen was 241.045±60.08 mg/dLand listed in Table3.1. Majority of the women were with pregnancy induced hypertension (68.2%) while women with preeclampsia was 19.7% and with eclampsia was 12.1% as shown in Table 3.2.Similarly, coagulopathy was also observed in 12.1% of patients and also displayed in Table 3.3.Stratification of Coagulopathy with respect to age groups, gestational age, gravida, parity, obesity and hypertensive disorders were also evaluated and results werelisted in Tables 3.4-3.9 respectively.

Table 1: Mean±SD of patients according to Demographic and selected Blood parameters

Demographics	Mean±SD
Age(years)	29.090±3.84
Gestational age(weeks)	28.000±2.87
PT (seconds)	9.530±3.82
APTT (seconds)	33.401±5.33
INR	1.105±0.24
Platelets (10^9/L)	203.765±78.91
Serum Fibrinogen (mg/dL)	241.045±60.08

Table 2: Percentage and Frequency of patients according to Hypertension Disorder

Hypertension Disorder	n	%age
PIH	90	68.2
Preeclampsia	26	19.7
Eclampsia	16	12.1

Table 3: Percentage and Frequency of patients according to Coagulopathy

Coagulopathy	n	%age
Yes	16	12.1%
No	116	87.9%

Table 4: Stratification of Coagulopathy with respect to age groups.

Age (years)	Coagulopathy		P value
	Yes	No	
20-30	8(10.1%)	71(89.9%)	0.391
31-40	8(15.1%)	45(84.9%)	
Total	16(12.1%)	116(87.9%)	

Table 5: Stratification of Coagulopathy with respect to gestational age

Gestational age (weeks)	Coagulopathy		P value
	Yes	No	
21-30	4(4%)	96(96%)	0.000
>30	12(37.5%)	20(62.5%)	
Total	16(12.1%)	116(87.9%)	

Table 6: Stratification of Coagulopathy with respect to gravida.

Gravida	Coagulopathy		P value
	Yes	No	
1-3	14(13.6%)	89(86.4%)	0.329
>3	2(6.9%)	27(93.1%)	
Total	16(12.1%)	116(87.9%)	

Table 7: Stratification of Coagulopathy with respect to parity

Parity	Coagulopathy		P value
	Yes	No	
0-2	14(13.6%)	89(86.4%)	0.329
>2	2(6.9%)	27(93.1%)	
Total	16(12.1%)	116(87.9%)	

Table 8: Stratification of Coagulopathy with respect to Obesity.

Obesity	Coagulopathy		P value
	Yes	No	
Yes	8(13.6%)	51(86.4%)	0.649
No	8(11%)	65(89%)	
Total	16(12.1%)	116(87.9%)	

Table 9: Stratification of Coagulopathy with respect to Hypertension Disorders.

Hypertension Disorders	Coagulopathy		P value
	Yes	No	
PIH	2(2.2%)	88(97.8%)	0.000
Preeclampsia	3(11.5%)	23(88.5%)	
Eclampsia	11(68.8%)	5(31.2%)	
Total	16(12.1%)	116(87.9%)	

Disseminated intravascular coagulopathy is among the leading causes of mortality in preeclampsia and eclampsia[5,6]. A high index of clinical suspicion coupled with early laboratory confirmation remains the primary approach in the execution of an effective preventive modality. Majority of the women were with pregnancy induced hypertension (68.2%) while women with preeclampsia was 19.7% and with eclampsia was 12.1%. Biochemical coagulopathy was noted in 12.1%. This observation demonstrates that inadequate antenatal care and monitoring, especially in peripheral centers, together play a key role in progression to severe disease which culminates in eclampsia. Nulliparity as a risk factor for preeclampsia and eclampsia was also seen in our study[7]. Similar to what we found, the advanced gestational age at recruitment in severe preeclampsia and eclampsia has been ascribed to the occurrence of late-onset but rapidly progressive disease in our environment [8]. Even so, the 12.1% rate of biochemical coagulopathy found in our study is higher than the 2% reported by[9], lower than 14.7% as reported by[10] but much lower than 50% found by Pritchard *et al*[11].The varying combinations of coagulation fibrinolytic indices studied, the peculiarities of the population studied as well as the individual predisposition to coagulopathy may have

significant impact on the results obtained, as well as their interpretation; and these may account for the different rates between studies. The finding that only participants with low platelet count were found to have biochemical coagulopathy has previously been documented by other workers[12]. Conversely, in a retrospective review of laboratory data obtained from 80 patients with hypertensive disorders of pregnancy in Pennsylvania, USA, minor abnormalities of PT, APTT and fibrinogen level were reported as frequent, even in patients with normal platelet count; however, these abnormalities were found mostly in patients with severe preeclampsia and eclampsia[13]. In[14], it was reportedreported that no correlation was found between levels of platelet count and those of PT, APTT or fibrinogen. However, consensus seems to favour the earlier involvement of platelets. Hence, it appears safe to monitor platelet count initially in the course of management, and to include coagulation indices when platelet count level decreases below 80,000 cell/µl. Previous researchers have also shown that biochemical coagulopathy appeared to be more severe with the development of eclampsia or other major complications such as abruptio placentae and intrauterine fetal death. Our findings also support this observation, and this suggests that early determination of the risk of coagulopathy and the ongoing evaluation to predict disease progression will assist in reducing morbidity and mortality contributed by preeclampsia and eclampsia. Hence, coagulopathy was increased further in patients who had a combination of thrombocytopenia and eclampsia in our study. The factors found to be associated with a significant risk of biochemical coagulopathy in preeclampsia in this study were severe disease, worsening thrombocytopenia and evolution to eclampsia. To reduce the burden of coagulopathy in preeclampsia and eclampsia, coagulation studies will be necessary in the evaluation to determine the severity and need for correction.

CONCLUSION

It is concluded that The risk of coagulopathy increases with development of eclampsia. This will help to identify patients who may develop coagulopathy and require immediate referral to reduce maternal and perinatal mortality and morbidity rates.

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