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Original Research Article

Association of abruptio placenta in patient with pre-eclampsia with severe features and without severe features

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ABSTRACT

Background: Placental abruption is responsible for increased risk of maternal and fetal morbidity and mortality worldwide. Studies specific to placental abruption in pregnancy-induced hypertension (PIH) are still lacking. This study is designed to focus on collecting data on placental abruption and to objectively determine its impact on the outcome of pregnancy complicated with PIH in terms of improving fetal and maternal morbidity and mortality.

Methods: This was retrospective observational study conducted at Cheluvamba Hospital, Mysore Medical College and Research Institute (MMCRI), Mysore, in the department of obstetrics and gynaecology. All pregnant women with diagnosis of abruptio placenta over 28 weeks and with PIH between January 2022 to August 2023 were included. Data was collected from medical records department and results were analysed.

Results: During the study period there were total of 14027 deliveries. Of this 63 (0.44%) occurred in patients with placental abruption with PIH. Mean age group was 24.57 years; majority were multigravida (58.46%) Majority were preterm (77.77%). 61.90% had pre-eclampsia with severe features. Mean systolic blood pressure (SBP) was 151.90 mmHg, diastolic blood pressure (DBP) was 98.73 mmHg. 65.08% delivered by caesarean section. 47.61% was the perinatal mortality, perinatal asphyxia was 45.71%, prematurity was 65.71%, low birth weight was 84.12%. 71.42% was the neonatal intensive care unit (NICU) admission rate. Maternal complications seen was postpartum haemorrhage (PPH) (31.74%), requiring blood and blood products transfusion (63.49%), coagulopathy (14.28%), shock (12.69%). 4 women developed severe features of pre-eclampsia in postpartum period, 2 of them needed MgSO₄. 58.73% had requirement of antihypertensives in postpartum period.

Conclusions: Abruption is one of the obstetric emergencies. In our study severe adverse maternal and perinatal outcomes were more pronounced in pre-eclampsia with severe features and it needs an individual and intense surveillance and management to have better maternal and perinatal outcome.

Keywords: Abruption, Pre-eclampsia, Severe features

INTRODUCTION

Pregnancy-induced hypertension (PIH) is the new onset hypertension in a pregnancy after the 20th week of gestation, in previously normotensive without proteinuria.^{1,2} The risk of PIH is estimated at 1:1500 pregnancies and is responsible for a high number of maternal and fetal deaths worldwide.³ The major complications are eclampsia, abruptio placenta,

intrauterine growth retardation, low birth weight babies, fetal distress, and neonatal deaths.⁴

Placental abruption is the premature separation of normally implanted placenta from the uterine wall after the period of viability until the second stage of labor. It is responsible for one third of all antepartum hemorrhages.⁵ It is responsible for increased risk of maternal and fetal morbidity and mortality worldwide.

Worldwide occurrence of placental abruption is seen in nearly 1% of all pregnancies.⁶ Associated risk factors with placental abruption are extremes of age, smoking, previous history of abruption, increased parity, twin pregnancy, polyhydramnios, chorioamnionitis, clotting disorders, and trauma to the abdomen.⁷ Studies specific to placental abruption in PIH are still lacking. In a study conducted in Albania in 2013, various complications were reported in PIH, which included renal impairment (12.3%), abruptio placenta (7.0%), eclampsia (3.3%) and DIC (2.8%).⁸

Research has been done internationally regarding risk factors, complications, and outcomes of PIH in association with preeclampsia and eclampsia. In contrast, studies on this subject are still devoid of much-needed data. This study is designed to focus on collecting data on placental abruption and to objectively determine its impact on the outcome of pregnancy complicated with PIH in terms of improving fetal and maternal morbidity and mortality.

Aim of study

Aim of study was to determine the association of abruptio placenta with pre-eclampsia with or without severe features, and to assess maternal and fetal outcome in terms of mortality and morbidity.

METHODS

This is a retrospective study carried out in department of obstetrics and gynaecology at Cheluvamba hospital, Mysore Medical College and Research Institute (MMCRI) Mysore during Jan 2022 to August 2023 after ethical clearance from institutional ethical committee.

All pregnant women with clinical diagnosis of abruptio placenta over 28 weeks and with PIH were included in the study. The study included primi or multigravida women with singleton pregnancy, period of gestation >28 weeks, either newly detected or known case of PIH. Detailed history and examination were done. Abruptio placenta were detected sonographically or by ARM and looking for blood-stained liquor. Decision for mode of delivery was based on BISHOP score. LSCS done for obstetric indications. If fetal distress noted, emergency LSCS was done. Blood and blood products were transfused based on amount of blood loss and patients' vitals. Course in the hospital, management, maternal and fetal outcome was obtained from our medical records and files.

Inclusion criteria

Pregnant women with >28 weeks of gestation, and women with abruptio placenta with pre-eclampsia were included.

Exclusion criteria

Other causes of APH other than abruptio placenta, less than 28 weeks of gestational age were excluded.

All the collected data were recorded and entered in the Microsoft excel data sheet. Data analysis was done using statistical package for the social sciences (SPSS) version-22 software.

RESULTS

During the study period there were total of 14027 deliveries. Of this 63 (0.44%) occurred in patients with placental abruption with PIH. 58.46% were multigravida and 41.54% were primigravida.

Mean age group in our study was 24.57 years. Majority of patients (36.50%) belonged to 21-25 years group (Table 1).

Table 1: Distribution of patients according to age (n=63).

Age in years	No.	Percentage
18-20	14	22.22
21-25	23	36.50
26-30	20	31.74
31-35	6	9.52

Majority were of preterm (77.77%). 19.04% were term gestation and 3.17% were in post-dated group. Mean gestation age was 34.4 weeks (Table 2).

Table 2: Distribution of patients gestational age (n=63).

Gestational age (weeks)	No.	Percentage
28-32	14	22.22
33-36	35	55.55
37-40	12	19.04
>40	2	3.17

A total of 61.90% had pre-eclampsia with severe features. Of the 63 subjects 18 (28.57%) were already a known case of PIH prior to admission. Out of them, 14 were on treatment prior to admission with antihypertensives.

A total of 45 of them were diagnosed as case of PIH at time of admission. Out of these 45, 25 (55.55%) had pre-eclampsia with severe features. The rest 20 (44.44%) had pre-eclampsia without severe features.

Mean SBP in patients of PE without severe features is 142.33 mmHg, and in patients of PE with severe features is 157.79 mmHg.

Mean DBP in patients of PE without severe features is 92.16 mmHg, and in patients of PE with severe features is 102.76 mmHg.

A total of 22 (34.92%) patients delivered vaginally There was more caesarean section in our study (65.08%) (Table 3).

Table 3: Association abruptio with preeclampsia (PE) with or without severe features (n=63).

PE with or without severe features	No.	Percentage
PE without severe features	24	38.10
PE with severe features	39	61.90

Mean baby weight in our study was 1850.23 grams (Table 4).

Table 4: Distribution of babies according to baby weight (n=63).

Baby weight in grams	No.	Percentage
<1000	5	7.93
1000-1500	18	28.57
1501-2000	17	26.98
2001-2500	13	20.63
2501-3000	8	12.69
3001-3500	2	3.17

A total of 44.44% was the stillborn rate in our study. Out of 35 babies born alive, 16 (45.71%) babies required resuscitation. 23 (65.71%) babies were premature (Table 5).

Table 5: Neonatal outcome (n=63).

Neonatal outcome	No.	Percentage
Alive	35	55.55
Stillborn	28	44.44

A total of 71.42% was the NICU admission rate in our study. Most common indication for NICU admission being asphyxia and preterm. There were two PNM due to severe birth asphyxia. Mean duration of stay in NICU was 3.7 days (Table 6).

Table 6: Babies requiring NICU admission (n=35).

NICU admission	No.	Percentage
Yes	25	71.42
No	10	28.57

A total of 31.74% had PPH which was managed medically in 12 cases, another 8 cases required uterine tamponade and 2 cases needed uterine artery ligation.

A total of 15 (36.58%) couvelaire uterus was noted during intra op. 63.49% needed blood and blood products transfusion. Coagulopathy was seen in 14.28%. Maternal shock was seen in 8 women (12.69%)

A total of 4 women developed severe features of pre-eclampsia in postpartum period, of them 2 needed MgSO₄

A total of 37 women (58.73%) had requirement of antihypertensives in postpartum period.

Mean duration of hospital stay was 6.2 days (Table 7).

Table 7: Maternal complications (n=63).

Maternal complications	No.	Percentage
PPH	20	31.74
Shock	8	12.69
Need for blood and blood products	40	63.49
Coagulopathy	9	14.28
Requirement of anti-hypertensives in postpartum period	37	

DISCUSSION

In our study incidence of placental abruption with PIH was 0.44%. Overall global incidence of abruptio placenta ranges between 0.5–2%.^{6,9,10} This is comparable with those studies.

Mean age group in our study was 24.57 years. Majority of patients (36.50%) belonged to 21-25 years group. This was comparable with study conducted by Khan et al which had mean age of 24.26 years were 58.46% were multigravida and 41.54% were primigravida in our study.¹¹ In a study by Prichard et al grand multiparity was associated with the risk of abruption.¹² Mean gestation age was 34.4 weeks. Majority were of preterm (77.77%). 19.04% were term gestation and 3.17% were in postdated group. This was comparable with study done by Khan et al which showed abruptio is more commonly seen with gestational age less than 37 weeks.¹¹

In our study, 61.90% had pre-eclampsia with severe features. Of the 63 subjects 18 (28.57%) were already a known case of PIH prior to admission. Out of them, 14 were on treatment prior to admission with antihypertensives. 38.10% of abruptio had PIH without severe features.

A total of 45 of them were diagnosed as case of PIH at time of admission. Out of these 45, 25 (55.55%) had pre-eclampsia with severe features. The rest 20 (44.44%) had pre-eclampsia without severe features.

Abruptio due to gestational hypertension or PIH without severe features was seen in 10% and 21% of cases among the local and regional populations, respectively.^{1,6,13} The risk of abruptio placenta was also found to be 2.4 times among women with PIH with severe features or chronic hypertension.^{14,15} This observation is further strengthened by results obtained by Zetterstron et al who reported twice as many cases of AP (incidence 1.1) in the presence of chronic hypertension when compared to normotensive women (0.5).¹⁶

Abruptio and preeclampsia are both considered conditions in the syndrome of ischemic placental disease.¹⁴

A history of preterm abruption coupled with preeclampsia increased the risk of preeclampsia to approximately 16-fold, which was much higher than expected under an additive model of the effects of placental abruption and preeclampsia alone seen in the study done by Parker et al indicating biologic interaction between these two events and the risk of preeclampsia.¹⁷

Mean SBP in patients of PE without severe features is 142.33 mmHg, and in patients of PE with severe features is 157.79 mmHg. Overall, in our study it was 151.90 mmHg. Mean DBP in patients of PE without severe features is 92.16 mmHg, and in patients of PE with severe features is 102.76 mmHg. Overall in our study mean DBP was 98.73 mmHg. In a study by Khan et al mean SBP was 148.48 mmHg and mean DBP was 94.85 mmHg.¹¹

A total of 65.08% patients were delivered by caesarean section in our study. In a study by Barua et al 95.35% were delivered by caesarean section.¹⁸

Adverse neonatal outcome observed in our study were 47.61% was the perinatal mortality, perinatal asphyxia requiring resuscitation at birth was 45.71%, prematurity was 65.71%, low birth weight was 84.12%. 71.42% was the NICU admission rate in our study. Mean duration of stay in NICU was 3.7 days. These results were comparable with study done by Alka et al.¹⁹

In our study, maternal complications seen was had PPH (31.74%), requiring blood and blood products transfusion (63.49%), coagulopathy (14.28%), shock (12.69%). 36.58% couvelaire uterus was noted during intra op. 4 women developed severe features of pre-eclampsia in postpartum period, of them 2 needed MgSO₄. 58.73% had requirement of antihypertensives in postpartum period. Mean duration of hospital stay was 6.2 days. There was no maternal mortality noted in our study.

Study by Barua et al had PPH (0.88%), DIC (15.79%), shock (8.77%), requiring blood or blood products transmission (73.68%), and mortality of 0.88%.¹⁸

In a study by Alka et al PPH was 14.4%, shock was seen in 13.6%, DIC was seen in 16.8%, massive transfusion was seen in 22.9%.¹⁹

CONCLUSION

Abruptio is one of the obstetric emergencies. In our study severe adverse maternal and perinatal outcomes were more pronounced in pre-eclampsia with severe features and it needs an individual and intense surveillance and management to have better maternal and perinatal outcome.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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