ORIGINAL ARTICLE

ASSOCIATION OF MATERNAL HYPERTENSION WITH PLACENTAL ABRUPTION

Samina Naseem Khattak, Farhat Deeba, Attiya Ayaz, Muhammad Irfan Khattak*

Department of Obstetrics and Gynaecology A Unit Ayub Teaching Hospital, Abbottabad,
***Department of Medicine, Military Hospital, Rawalpindi, Pakistan**

Background: Placental abruption is one of the leading causes of maternal mortality and morbidity. Many causes predispose an expecting mother to placental abruption, such as trauma, previous history, smoking, ethnicity and hypertension. The present study concentrated on maternal hypertension as a cause of abruption. **Methods:** All subjects of this comparative study underwent a complete obstetrical clinical workup comprising history, general physical examination, abdominal and pelvic examination, and relevant investigations. The maternal condition was assessed and managed according to established labour ward protocols, which included both pharmacological and surgical intervention. Patients were allotted various subgroups for detailed data analysis and comparative analysis. **Results:** A total of 50 cases and 50 controls for placental abruption were studied during the study period. Both groups were compared based on parity, gestational age, proteinurea, haemoglobin, and hypertension. Mean systolic blood pressure (SBP) of cases in this study was 155±7.8 mmHg versus mean SBP for controls was 120±14 mmHg. Mean diastolic blood pressure (DBP) of the cases was 104±6.6 mmHg compared to controls where mean DBP was 71±11 mmHg. Among the controls, 45 (90%) had blood pressures in the normal range. There was statistically significant differences between cases and controls with respect to hypertension (p<0.01). **Conclusion:** Placental abruption is strongly associated with maternal hypertension.

Keywords: Placental Abruption, Hypertension, Maternal Morbidity, Antepartum Haemorrhage (APH)

INTRODUCTION

Abruptio placentae refers to separation of the normally located placenta after 24 weeks of gestation. This event occurs with a frequency of 1 in 129 births. *Abruptio placentae* has achieved resurgence in awareness given the causal relationship with hypertension and cocaine. Severe abruption has a foetal mortality rate of 0.2%.[1]

Bleeding into the decidua basalis leads to separation of the placenta. Hematoma formation further separates the placenta from the uterine wall and compresses these structures, compromising the blood supply to the foetus and leading to increased intrauterine pressure, uterine tenderness, frequent uterine contractions, foetal distress, and foetal death. The severity of foetal distress correlates with the degree of placental separation.[1–3]

Retroplacental blood can penetrate the thickness of the uterine wall into the peritoneal cavity because of increased intrauterine pressure. This phenomenon is called couvelaire uterus. The myometrium becomes weakened and rarely ruptures, leading immediately to a life-threatening obstetrical emergency. In near-complete or complete abruption, foetal death is inevitable unless the foetus is immediately delivered by caesarean section.[3,4]

Painful vaginal bleeding in the third trimester is the hallmark. As ultrasonography for this disorder has a high false-negative rate, this obstetric complication is diagnosed based on the findings of vaginal bleeding, abdominal pain, uterine tenderness, uterine contractions, and foetal distress. Diagnosis of this condition is mostly clinical.

In 40–50% of women with abruptio placentae there is underlying hypertension. Maternal trauma is the cause in 1.5% to 9.4%. The remaining cases are associated with excessive alcohol consumption, cocaine use, sudden decompression after ARM and possibly tobacco use. In a small group, no underlying association is found. Probably abnormalities of uterine blood vessels and decidua exists in this idiopathic group.[4–7]

Placental abruption is frequently seen in our population, however, local work on this important condition is very sparse. Few studies have reported maternal morbidity and mortality associated with this condition.[6] The objective of this study was to determine the association of maternal hypertension and placental abruption with a view to propose preventive measures.

MATERIAL AND METHODS

This was a comparative study conducted in Obs/Gyn Unit A of Ayub Teaching Hospital, Abbottabad over a period of one year. A total of 50 patients with placental abruption of all ages and parity were labelled as cases and another 50 without evidence of abruption group matched for gestation and age were labelled as controls. Patients were selected from all patients admitted for delivery. Women with placenta previa, history of trauma, genital tumours, genital infections, vulvo-vaginal varicosity, and vasa previa, were excluded from the study. Approval of the Ethical Committee and informed consent from the patients was obtained.

Patients were assessed on the basis of history and clinical examination. Relevant laboratory investigations were carried out. Selection bias was avoided by resorting to selection of the cases and controls as per criteria. Data were analysed using SPSS-10. Numeric data were described in terms of Mean±SD, whereas categorical data as frequencies and percentages. Differences of frequencies (age parity period of gestation systolic and diastolic blood pressure) between groups were tested by using the Chi-square test, whereas differences of means between controls and cases were tested for significance using Student's *t*-test. A *p* value ≤0.05 was considered significant. Odds ratio was calculated with 95% confidence interval for hypertension as exposure for cases and controls. Systolic blood pressure of ≥140 mmHg and diastolic blood pressure ≥90 mmHg was taken as hypertension.

RESULTS

A total of 50 cases and 50 controls were included in the study. Ages of patients ranged from 16 to 40 years, with a mean age of 29.88±5.17 years for cases and 27.8±5.3 years for controls (Table-1). Gestational age ranged from 35 to 41 weeks with mean gestational age of 35.5±4.2 (cases) and 35.28±4.2 (controls). Mean parity for cases was 3.3±2.2 and that of controls, was 1.5±2.2. Systolic blood pressure (SBP) of the subjects ranged from 100 to 180 mmHg in cases. Mean systolic blood pressure (SBP) of the cases was 155±7.79 mmHg while mean SBP for controls was 120±13.48 mmHg. Mean SBP of all subjects together was 137±20.99 mmHg. Diastolic BP in the subjects ranged from 80 to 120 mmHg. Mean diastolic blood pressure (DBP) of the cases was 104±6.6 mmHg, and 71±11 mmHg in control group. Mean DBP was 87.18±19.14 mmHg in all subjects together (Table-1).

Mean urinary protein in cases was 1035.76±657.29 mg while it was 16.00±79.17 mg in controls.

Forty-nine (98%) of the cases and 5 (10%) controls were hypertensive while 1 (2%) case and 45 (90%) controls were non-hypertensive (*p*=0.000) (Table-2).

Table-1: Age, parity, gestation and BP of subjects

	Cases Mean±SD	Controls Mean±SD	Total Mean±SD
Age (years)	30±5.1	27±5.3	28±5.3
Parity	3±2.2	1±2	2±2.3
Period of Gestation (wks)	35±4.2	35±4.2	35±4.2
Systolic BP (mmHg)	155±7.79	120±13.48	137±20.99
Diastolic BP (mmHg)	104±6.60	71±11.83	87±19.14

Table-2: Comparison of hypertension in cases and controls

	Cases	Controls	Total	*p*-Value
Hypertensive	49	5	54	0.000
Non Hypertensive	1	45	46	

DISCUSSION

Placental abruption is an obstetric emergency and large number of risk factors have been determined that are closely associated with it. Maternal age and education, chronic hypertension, pregnancy induced hypertension, parity, smoking, small for gestational age, chorio-amnionitis, prolonged rupture of membranes, anaemia, ischemic heart disease etc. have been postulated and at times refuted as causes of placental abruption. Global and local literature is full of conflicting results regarding association of placental abruption and various aetiological factors.[2–4, 6–14]

This study mainly focused on determining association of hypertension with placental abruption in local population of Abbottabad. Liquat *et al*[15] found hypertension, preeclampsia, anaemia, and grandmulti-parity most common associated risk factors. In our study, multiparity was found to have imperative contribution toward placental abruption. On the other hand, Kramer *et al*[7] found no influence of multiparity on frequency of placental abruption. This difference may have been due to variable influence of parity in different ethnic groups. Our study, and that of Liquat *et al*[15] mainly focused on Pakistani population while Kramer *et al* carried out their study on American population. A similar study by Tasleem *et al*[6] found that out of 50 cases, abruption was seen in 4 (8%) patients who did not receive treatment for hypertension while no abruption was seen in treated group. Our study also supports the close association of hypertension with abruption as in their study. However, percentage of hypertensive cases is much higher (98%) in our study. This gross difference may have been due to different study populations, design, and small number of patients. Major bulk of international literature is in agreement on the fact of strong association between maternal hypertension and placental abruption. Results of our study are keeping with both local and global literature in this regard.

A study carried out by Ananth *et al*[12] discovered that rates of abruption among women with and without chronic hypertension were 15.6 and 5.8 per 1,000 pregnancies, respectively. In our study similar significant association was observed between hypertension and placental abruption. We grouped all cases of hypertension as maternal hypertension and did not subcategorise them into chronic hypertension, pregnancy induced hypertension and preeclampsia etc. This limitation of our study was mainly because of poor antenatal checkups and limited record keeping in our community. Overall, in our study, most significant association of placental abruption was found with maternal hypertension. This fact is supported by global as well as local literature.

CONCLUSION & RECOMMENDATIONS

Placental abruption is strongly associated with maternal hypertension. If hypertension is treated properly, the frequency of placental abruption can be reduced.

REFERENCES

1. Ananth CV, Getahun D, Peltier MR, Smulian JC. Placental abruption in term and preterm gestations: evidence for heterogeneity in clinical pathways. Obstet Gynecol 2006;107:785–92.
2. Ananth CV, Savitz DA, Bowes WA, Jr., Luther ER. Influence of hypertensive disorders and cigarette smoking on placental abruption and uterine bleeding during pregnancy. Br J Obstet Gynaecol 1997;104:572–8.
3. Ananth CV, Savitz DA, Williams MA. Placental abruption and its association with hypertension and prolonged rupture of membranes: a methodologic review and meta-analysis. Obstet Gynecol 1996 ;88:309–18.
4. Cnattingius, S. Maternal age modifies the effect of maternal smoking on intrauterine growth retardation but not on late fetal death and placental abruption. Am J Epidemiol 1997;145:319–23.
5. Hibbard BM, Hibbard ED. Aetiological Factors in Abruptio Placentae. Br Med J 1963;2(5370):1430–6.
6. Tasleem H, Tasleem S, Adil MM, siddique M, Waheed K. Co-relation of pregnancy induced hypertension with placental abruption and effect of antihypertensive therapy. Rawal Med J 2005;30:59–61.
7. Kramer MS, Usher RH, Pollack R, Boyd M, Usher S. Etiologic determinants of abruptio placentae. Obstet Gynecol 1997;89:221–6.
8. Rasmussen S, Irgens LM, Bergsjo P, Dalaker K. The occurrence of placental abruption in Norway 1967–91. Acta Obstet Gynecol Scand 1996;75:222–8.
9. Sheiner E, Shoham-Vardi I, Hadar A, Hallak M, Hackmon R, Mazor M. Incidence, obstetric risk factors and pregnancy outcome of preterm placental abruption: a retrospective analysis. J Matern Fetal Neonatal Med 2002;11(1):34–9.
10. Williams MA, Lieberman E, Mittendorf R, Monson RR, Schoenbaum SC. Risk factors for abruptio placentae. Am J Epidemiol 1991;134:965–72.
11. Pritchard JA, Mason R, Corley M, Pritchard S. Genesis of severe placental abruption. Am J Obstet Gynecol 1970;108(1):22–7.
12. Ananth CV, Oyelese Y, Yeo L, Pradhan A, Vintzileos AM. Placental abruption in the United States, 1979 through 2001: temporal trends and potential determinants. Am J Obstet Gynecol 2005;192:191–8.
13. Oyelese Y, Ananth CV. Placental abruption. Obstet Gynecol 2006;108:1005–16.
14. Mackenzie AP, Schatz F, Krikun G, Funai EF, Kadner S, Lockwood CJ. Mechanisms of abruption-induced premature rupture of the fetal membranes: Thrombin enhanced decidual matrix metalloproteinase-3 (stromelysin-1) expression. Am J Obstet Gynecol 2004;191:1996–2001.
15. Liquat NF, Shoaib T, Shuja S. A study of abruptio placentae. J Surg Pak 2006;11(1):27–30.

Address for Correspondence:

Dr. Samina Naseem Khattak, CB-30/4, Rehmania Street, Javed Shaheed Road, Jinnahabad, Abbottabad, Pakistan.
Cell: +92-333-9629253
Email: saminakk@gmail.com