

# FREQUENCY OF RISK FACTORS ASSOCIATED WITH PLACENTAL ABRUPTION

Irum Batool Hashmi, Fauzia Afridi, Fauzia Anbreen, Naseem Saba, Meher-un-Nisa

Department of Obstetrics and Gynaecology, Gomal Medical College, D.I. Khan - Pakistan

## ABSTRACT

**Objective:** To determine the frequency of risk factors associated with placental abruption.

**Material and Methods:** Total 177 patients of placental abruption were studied during June 2010 to June 2011 at Obstetrics and Gynaecology Department, Hayatabad Medical Complex, Peshawar. Sample technique was non probability purposive sampling and study design was descriptive (cross sectional). Statistical package SPSS 10 used for data analysis.

**Results:** In this study most of the patients 27% were in age group 15-20 years. Mean age was 37 years with standard deviation  $\pm 0.27$ , 78% patients were multi gravidas while 22% patients were primi gravida, 90% patients were in 3<sup>rd</sup> trimester and 10% patients were 2<sup>nd</sup> trimester. Regarding risk factors 15% patients had chronic hypertension, pre eclampsia was found in 16% patients, rupture of membrane was found in 11% patients and trauma was found in 3% patients.

**Conclusion:** Pregnancy induce hypertension, chronic hypertension, pre eclampsia, pre mature rupture of membrane are common risk factors of placental abruption, these all can be prevented by good antenatal care, early intervention and proper treatment.

**Key Words:** Placental abruption, risk factors.

## INTRODUCTION

Placental abruption, defined as the complete or partial separation of the placenta before delivery, is one of the leading causes of vaginal bleeding in the second half of pregnancy. Approximately 0.51% of the pregnancies are complicated by placental abruption. Bleeding and pain are classical symptoms of abruption but the clinical picture of this emergency varies.<sup>1</sup> Placental abruption is one of the most important causes of maternal morbidity and perinatal mortality. Approximately 10% of all preterm births and up to one third of all perinatal deaths are caused by placental abruption. In many countries the rate of placental abruption has been increasing, perhaps due to advancing maternal age and increasing cesarean section rates.<sup>2</sup>

Although several risk factors are known, the cause of placental abruption often remains unexplained. The trophoblastic invasion in the spiral arteries and subsequent early vascularisation may be defective.<sup>3</sup> Moreover; placental abruption may also be a manifestation of an inflammatory process which could affect also vascular bed. Despite heightened awareness of placental abruption, it still remains largely

unpredictable and therefore also unpreventable. A reliable biochemical marker to detect individuals at risk before clinical emergency would be most useful in clinical practice. Although several markers have been studied, none has so far emerged as clinically useful.<sup>4,5,6</sup>

## MATERIAL AND METHODS

This study was conducted at Obstetrics and Gynaecology Department, Hayatabad Medical Complex, Peshawar. Study design was descriptive (cross sectional) and the duration of the study was one year from June 2010 to June 2011. Sample technique was non probability (purposive sampling) where as the total sample size was 177 taking 8%<sup>7</sup> proportion of pregnancy induce hypertension, keeping margin of error 4% with confidence interval of 95% by using WHO software for sample size determination. Inclusion criteria was all pregnancies (Singleton, Multiple, Primi Gravida, Multi Gravida) with placental abruption from 28 weeks onwards, Reproductive age group (15 to 45 years), and exclusion criteria was Congenital uterine mal formation: Detected by ultrasound. Bleeding disorders: For example thrombophillias by taking past medical history. Retero placental fibromyoma: Detected by ultrasound.

All the patients admitted through outpatient and casualty, meeting inclusion criteria were enrolled in the study. Written informed consents were taken from all patients. The patients of placental abruption were diagnosed on the basis of history i.e. per vaginal

### Address for Correspondence:

**Dr. Irum Batool Hashmi**

Senior Registrar

Gomal Medical College, D.I. Khan - Pakistan

Cell: 0300-5796291

Email: [batool\\_irm@yahoo.com](mailto:batool_irm@yahoo.com)

bleeding, abdominal pain and on examination tense tender abdomen. Personal biodata, demographic data, obstetric history and past medical history were taken. Information was obtained whether antenatal care received or not. General physical examination was done, per abdominal, per speculum and per vaginal examination was done, history regarding nature of trauma was taken and patient were asked about any per vaginal discharge (for pre labour rupture of membranes). All routine investigations (full blood count, virology etc.) were carried out twenty four hours urine were collected and sent to laboratory for protein detection. Expert radiologist had done obstetrical ultrasound and expert pathologist had done all laboratory investigations in hospital laboratory using same method to control bias in the study. A proforma was designed and all information collected and was recorded. Exclusion criteria were strictly followed to control confounders and bias in this study.

All the data was analyzed in SPSS 10.0. Mean  $\pm$  standard deviation was calculated for numerical variables like age, period of gestation. Frequency and percentages were calculated for categorical variables like trauma, pregnancy induced hypertension, pre-eclampsia, chronic hypertension under stratification to control for effect modifiers. All the results were presented in the form of tables and charts.

## RESULTS

Age distribution among 177 patients was analyzed as most of the patients  $n=48(27\%)$  were in age group 15-20 years followed by  $n=27(15\%)$  patients were in age group 31-40 years,  $n=84(48\%)$  patients were in age group 21-30 years and  $n=18(10\%)$  patients were above 40 years of age. Mean age was 37 years with standard deviation  $\pm 0.27$ . Parity distribution among 177 patients was analyzed as most of the patients  $n=138(78\%)$  were multi gravidas where as  $n=39(22\%)$  patients were primi gravida (Table 2). Period of gestation among 177 patients was analyzed as most of the patients  $n=159(90\%)$  were in 3<sup>rd</sup> trimester while  $n=18(10\%)$  patients were 2<sup>nd</sup> trimester.

Common risk factors among 177 patients was analyzed as pregnancy induced hypertension was found in  $n=27(15\%)$  patients, Chronic hypertension was found in  $n=19(11\%)$  patients, pre eclampsia was found in  $n=29(16\%)$  patients, rupture of membrane was found in  $n=19(11\%)$  patients and trauma was found in  $n=5(3\%)$  patients. Association of risk factors in age group was analyzed as 11 cases of pregnancy induced hypertension were found in age group 15-20 years followed by 9 cases which were found in age group 21-30 years and 7 cases were found in age group 31-40 years. Two cases of chronic hypertension were found in age group 15-20 years followed by 3 cases which were found in age group 21-30 years, 10 cases were found in age group 31-40 years and 4 cases were

found in patients above 40 years of age. Ten cases of pre eclampsia were found in age group 15-20 years followed by 6 cases which were found in age group 21-30 years, 11 cases were found in age group 31-40 years and 2 cases were found in patients above 40 years of age. Two cases of rupture of membrane were found in age group 15-20 years followed by 4 cases which were found in age group 21-30 years, 9 cases were found in age group 31-40 years and 4 cases were found in patients above 40 years of age. Two cases of trauma were found in age group 15-20 years followed by 1 case which was found in age group 21-30 years and 2 cases were found in age group 31-40 years.

Association of risk factors with gravidity was analyzed as 8 cases of pregnancy induced hypertension were primi gravida and 19 cases were multi gravida. Five cases of chronic hypertension were primi gravida and 14 cases were multi gravida. Nine cases of pre eclampsia were primi gravida and 20 cases were multi gravida. Five cases of rupture of membrane were primi gravida and 14 cases were multi gravida. One case of trauma was primi gravida while 4 cases were multi gravida.

Association of risk factors in period of gestation was analyzed as 5 cases of pregnancy induced hypertension had occurred in 2<sup>nd</sup> trimester while 22 cases had occurred in 3<sup>rd</sup> trimester. Five cases of chronic hypertension had occurred in 2<sup>nd</sup> trimester while 14 cases had occurred in 3<sup>rd</sup> trimester. Seven cases of pre eclampsia had occurred in 2<sup>nd</sup> trimester while 20 cases had occurred in 3<sup>rd</sup> trimester. Three cases of rupture of membrane had occurred in 2<sup>nd</sup> trimester while 16 cases had occurred in 3<sup>rd</sup> trimester. One cases of trauma had occurred in 2<sup>nd</sup> trimester while 4 cases had occurred in 3<sup>rd</sup> trimester.

## DISCUSSION

The study was based on patients of Placental abruption in which risk factors like pregnancy induced hypertension, chronic hypertension, pre eclampsia, rupture of membrane, trauma were analyzed at Obstetrics and Gynaecology Department, Hayatabad Medical Complex, Peshawar. Our study showed that incidence of placental abruption is more common in age range 21-30 years, similar results were shown in study done by Plunkett J et al<sup>11</sup> in which most cases of abruption 58% occurred in the age group 20-30 years age while abruption occurred only in 39% above the age of 40 years. In another study done by Mortensen JT<sup>10</sup> the same results were found as placental abruption 56% occurred in age group 21-30 years and 32% occurred in age group 15-20 years.

Gravidity is another risk factor in many studies.<sup>10</sup> Our results show that occurrence of placental abruption is more in multigravida (78%) as compare to primigravida (22%) patients. Similarly the incidence of abruption is more common in 3<sup>rd</sup> trimester 90% followed by 10% in 2<sup>nd</sup> trimester in period of gestation.

Similar results were found in study done by Pitaphon A et al<sup>9</sup> in which multiparity, particularly grand multiparity has been specified as a factor predisposing to increased frequency of abruptio placentae. The number of multiparous females in their study was 47 (88.7%), while primigravida were only 6 (11.3%). Of the multiparous females, 26 (49.1%) were in the multigravida group (1-4 children) and 21 (39.6%) were grand multigravida. The same results were shown in another study done by Mortensen JT et al in which 75% abruption had occurred in multi gravida while only 25% cases had occurred in primi gravida.

In our study pregnancy induced hypertension was found in 15% patients, chronic hypertension was found in 11% patients, pre eclampsia was found in 16% patients, rupture of membrane was found in 11% patients and trauma was found in 3% patients. Similar results were found in study done by Bibi S et al<sup>8</sup> in which incidence of pregnancy induced hypertension was found in 8% patients, chronic hypertension was found in 9% patients, pre eclampsia was found in 17.5% patients, rupture of membrane was found in 8.7% patients. In another study the association of abruptio placentae with hypertension has been studied by other authors as well. Plunkett J<sup>11</sup> noted in a study of abruption that the incidence of abruption was highest with pre eclampsia (21%), chronic hypertension (9%), pre labor rupture of membrane was (10%) and pregnancy induced hypertension was (20%). Pitaphan et al<sup>9</sup> noted in a study of 265 cases of abruption that the incidence of abruption was highest with pre eclampsia (23.6%), followed by chronic hypertension (10.0%), pre labor rupture of membrane was (10%) and pregnancy induced hypertension was (20%).

Our study showed that pregnancy induced hypertension mostly occurs in age range 15-20 years, trauma mostly occur in age range 15-20 years, multigravida and in 3<sup>rd</sup> trimester. Similar results were found in study done by Bibi et al<sup>8</sup> in which pregnancy induced hypertension mostly occurs is 15-20 years, chronic hypertension occurs in 31-40 years and above, Pre eclampsia occurs in age range 15-20 years or 31-40 years, pre labour rupture of membrane occurs in 31-40 years and above. In another study done by Pitaphan A<sup>9</sup> the association of risk factors were analyzed with parity and period of gestation was reported as the incidence of pregnancy induced hypertension, chronic hypertension, pre eclampsia, pre labour rupture of membrane is more common in multigravida and specially in 3<sup>rd</sup> trimester of POG.

## CONCLUSION

Good antenatal care, early intervention and proper treatment of risks factors can reduced placental abruption.

## REFERENCES

1. Acien P. Incidence of Mullerian defects in fertile and infertile women. *Hum. Reprod.* 2000; 12: 137-76.
2. Adema E, Gebert U. Pooled patient samples as reference material for DDimer. *Thromb. Haemostasis.* 2001; 80: 85-88.
3. Allred LS, Batton D. The effect of placental abruption on the shortterm outcome of premature infants. *Am. J. Perinatol.* 2004; 21: 15-71.
4. Ananth CV, Berkowitz GS, Savitz DA, Lapinski RH. Placental abruption and adverse perinatal outcomes. *JAMA* 2000; 282: 46-65.
5. Ananth CV, Cnattingius S. Influence of maternal smoking on placental abruption in successive pregnancies: a populationbased prospective cohort study in Sweden. *Am J Epidemiol* 2007; 166: 89-95.
6. Getahun D, Peltier MR, Smulian, JC. Placental abruption in term and preterm gestations: evidence for heterogeneity in clinical pathways. *Obstet. Gynecol.* 2008; 107: 85-92.
7. Burd L, Roberts D, Olson M, Odendaal H. Ethanol and the placenta: a review. *J. Matern. Fetal Neonatal Med.* 2007; 20: 36-75.
8. Bibi S, Ghaffar S, Pir MA, Yousafani S. Risk factors and clinical outcome of placental abruption; a retrospective analysis. *J Pak Med Assoc* 2009; 59: 672.
9. Pitaphron A, Sukeharoen N. Pregnancy outcome in Placental abruption. *J Med Assoc Thai* 2006; 89: 1572-78.
10. Mortensen JT, Thulstrup AM, Larsen H, Moller M. Smoking, sex of the offspring, and risk of placental abruption, placenta previa, and preeclampsia: a populationbased cohort study. *Acta Obstet.* 2007; 80: 894-98.
11. Plunkett J, Borecki I, Morgan T, Stamilio D, Muglia LJ. Population-based estimate of sibling risk for preterm birth, preterm premature rupture of membranes, placental abruption and pre-eclampsia. *BMC Genet.* 2008; 8: 44.