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Original Article

Assessment of Risk Factors of Pregnancy Induced Hypertension- A Retrospective Hospital Based Study

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ABSTRACT:

Introduction: Pregnancy induced hypertension is a major complication in relation to pregnancy associated with premature delivery, intra-uterine growth retardation (IUGR), abruptio placentae, and intra-uterine death, as well as maternal morbidity and mortality. Very few studies have been conducted in India to assess the determinants of pre-eclampsia. Hence present study was planned and retrospective analysis was carried out to reveal major risk factors for pregnancy induced hypertension so that healthcare professionals can assess each pregnant woman's risk of pre-eclampsia at her booking visit and can manage her antenatal care according to need. **Material and Methods:** The present retrospective study was carried out among records of 300 cases of pregnancy induced hypertension reported to the Department of Obstetrics and Gynaecology, Medical College, Agroha, India over a period of 3 years. The data was collected regarding socio-demographic details, personal history, past history and family history of this disease related variables. The data so revealed was arranged and analyzed. Descriptive analysis was performed, of which data are presented in the table. **Results:** The prevalence of hypertension in pregnancy was found higher in the age group <25 years (249 cases) as compared to ≥25 years age group. 278 patients were primi. 22 patients were multigravida, out of which 17 patients had previous cesarean section. 6 patients had multiple pregnancy (twins). Family history of hypertension was present in 163 cases. 217 women who had their first conception within one year of their marriage. Out of 300 cases of pregnancy related hypertension, 281 was PIH, 9 was foetal distress with PIH, 1 was of pre-eclampsia, 3 was eclampsia, 2 was PIH with polyhydramnios, 1 was PIH and intra-uterine growth retardation (IUGR) and 2 was PIH with abruptio placentae. Emergency cesarean section was performed in 181 cases. **Conclusion:** The present study concludes that pregnancy induced hypertension was more prevalent in the age group <25 years and the majority of patients were primi and had educational status less than graduation which can be attributed to girls getting married and conceiving at an early age and have a conservative behavior towards seeking ante-natal care as well as lack of awareness are also responsible for the same. Assessment of risk factors would identify women in early pregnancy who are at high risk of preeclampsia. Proper antenatal monitoring and time to time hospital visit can help to prevent adverse outcomes of pregnancy induces hypertension.

Keywords: Pregnancy induced hypertension; Prenatal care; Preeclampsia

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INTRODUCTION

India has a very high maternal mortality rate and the major causes of maternal deaths are haemorrhage, sepsis, hypertension, obstructed labour, abortion and other conditions. Hypertension which can be a sign of pre-eclampsia can result in maternal death.¹ The factors that have been postulated to influence the risk of pre-eclampsia

among the mothers include diabetes, renal disease, obesity, multiple pregnancy, primiparity, age above 30 years, personal or family history of pre-eclampsia, and chronic hypertension.²

Pregnancy induced hypertension (PIH) is described as BP ≥ 140/90 mmHg, taken after a period of rest on two occasions or ≥ 160/110 mmHg on one occasion in a

previously normotensive female. Pre-eclampsia is broadly classified by hypertension and proteinuria. Eclampsia is categorized as pre-eclampsia with the occurrence of convulsions not attributable to other neurologic disease. PIH is a major complication in relation to pregnancy associated with premature delivery, intra-uterine growth retardation (IUGR), abruptio placentae, and intra-uterine death, as well as maternal morbidity and mortality.³ Nobis PN et al⁴ analyzed data from 1980 to 2015 and reported that incidence of eclampsia in India is about 1.5 ranging from 0.179 to 5 % and found that there is no reduction in incidence of eclampsia and perinatal mortality rate over the last few decades. However, maternal mortality has shown a slight receding trend. Very few studies have been conducted in India to assess the determinants of pre-eclampsia. Hence present study was planned and retrospective analysis was carried out to reveal major risk factors for pregnancy induced hypertension so that healthcare professionals can assess each pregnant woman's risk of pre-eclampsia at her booking visit and can manage her antenatal care according to need.

RESULTS

Table 1: Retrospective analysis of risk factors among Pregnancy induced hypertensive patients

Variables		No. of cases of pregnancy induced hypertensive cases (n=300)
Age	<25 years	249
	≥ 25 years	51
Educational status	< graduation	264
	≥ graduation	36
Parity	Primi	278
	Multigravida	22
Previous cesarean section	Yes	17
	No	283
Multiple pregnancy	Yes	6
	No	294
Time period between present and previous pregnancy	<1 year	1
	>1 year	21
Family history of hypertension	Yes	163
	No	137
Time period b/w marriage & first conception	<1 year	217
	>1 year	83
Diagnosis	PIH	281
	Foetal distress with PIH	9
	Pre-eclampsia	1
	Eclampsia	3
	PIH with Polyhydramnios	2
	PIH and intra-uterine growth retardation (IUGR), PIH and abruptio placentae	1
Emergency cesarean section		181

MATERIAL AND METHODS

The present retrospective study was carried out among records of 300 cases of pregnancy induced hypertension reported to the Department of Obstetrics and Gynaecology, Medical College, Agroha, India over a period of 3 years from 2014 onwards. Risk factors assessed were in accordance with Duckitt K et al⁵ who studied published literature to identify risk factors detectable at an antenatal booking visit and according to study conducted by K R, Gandhi S et al.¹

Pregnancy induced hypertension was defined as new hypertension with blood pressure of 140 mmHg systolic or diastolic pressure of 90 mmHg or greater arising after 20wk of gestation in a woman who was normotensive before 20wk of gestation. Pre-eclampsia was defined as a pregnancy induced hypertension associated with proteinuria. The data was collected regarding socio-demographic details, personal history, past history and family history of this disease related variables.

The data so revealed was arranged and analyzed. Descriptive analysis was performed, of which data are presented in the table.

The prevalence of hypertension in pregnancy was found higher in the age group <25 years (249 cases) as compared to ≥ 25 years age group (table 1). The majority of patients had educational status less than graduation. 278 patients were primi. 22 patients were multigravida, out of which 17 patients had previous cesarean section. 6 patients had multiple pregnancy (twins).

Family history of hypertension was present in 163 cases. 217 women who had their first conception within one year of their marriage. Out of 300 cases of pregnancy related hypertension, 281 was PIH, 9 was foetal distress with PIH, 1 was of pre-eclampsia, 3 was eclampsia, 2 was PIH with polyhydramnios, 1 was PIH and intra-uterine growth retardation (IUGR) and 2 was PIH with abruptio placentae. Emergency cesarean section was performed in 181 cases.

DISCUSSION

Hypertension complicates approximately 6-8% of all pregnancies. Differences exist in the incidence of hypertensive disorders of pregnancy in the populations of Southeast Asia and the fact that these are not caused by underlying differences in the baseline blood pressures in these populations.¹ Preeclampsia could be defined as a progressive hypertension ($>140/90$ mmHg) occurring after the 20th week of gestation, most frequently in the last 6 weeks. It occurs in 14-20% of the primigravidas, in 5.7-7.3% of multigravidas and in 25% of chronic hypertensives. The course of hypertension caused by pregnancy could vary from pure hypertension to preeclampsia, eclampsia, and HELLP (Hypertension, Elevated Liver Enzymes, Low Platelets) Syndrome.⁶ In the present study, pregnancy induced hypertension was more prevalent in the age group <25 years as compared to ≥ 25 years age group. The majority of patients were primi and had educational status less than graduation. This can be attributed to the age itself or due to inadequate antenatal care and lack of awareness regarding antenatal care due to less education of the patient. Younger age and less education are thus important risk factors in pregnancy induced hypertension. pregnancy induced hypertension. Leppälähti S et al⁷ assessed obstetric outcomes in teenage pregnancies and reported that inadequate antenatal care may place teenagers at markedly elevated risks of eclampsia, UTI and adverse neonatal outcomes even in a society offering high-quality care to all pregnant women.

Increased age of women is an important risk factor due to increased villous reaction leading to pre eclampsia in a woman greater than 30 years. However, nulliparity is associated with increased risk of pre - eclampsia and eclampsia by two folds. This is because nulliparity is due to initial trophoblastic invasion and how the mother reacts to it. The failure of the normal invasion of trophoblastic cells leads to maladaptation of the spiral arterioles, which are related to the causation of pre-eclampsia.¹ Silva LM et al⁸ examined association of maternal educational level

with preeclampsia and found that adjusted for the confounding effects of age, gravidity and multiple pregnancy, women with low educational level were more likely to develop preeclampsia than women with high educational level.

Ganesh KS et al² conducted a case-control study to find determinants of pre-eclampsia and demonstrated that the pre pregnancy BMI of ≥ 25 , history of chronic hypertension, family history of hypertension, history of renal disease, history of diabetes and multiple pregnancy were significant independent determinants of pre-eclampsia. Abetew DF et al⁹ examined associations of age at menarche and menstrual characteristics with the risk of preeclampsia among participants of a pregnancy cohort study. There was a significant inverse association between age at menarche and risk of preeclampsia and the study suggested that prepregnancy weight may modify correlation of long menstrual cycles with risk of preeclampsia. Mehta B et al¹⁰ reported prevalence of hypertension in pregnancy to be significantly higher in women with period of gestation <20 weeks, previous cesarean section, previous preterm delivery, history of hypertension in previous pregnancy, and history of paternal hypertension. Hernandez-Diaz S et al¹¹ studied risk of preeclampsia in first and subsequent pregnancies and reported that risk of pre-eclampsia was 4.1% in the first pregnancy and 1.7% in later pregnancies overall. In the present studied cases, maximum cases (93%) were women with first pregnancy. Conde-Agudelo A et al¹² conducted study regarding impact of the impact of interpregnancy interval and reported that interpregnancy intervals less than 6 months and longer than 59 months had significantly increased risks of pre-eclampsia and eclampsia.

The present study found that the pregnancy induced hypertension was more in women who conceived within a year of their marriage. The reason can be assumed that in our country especially in rural areas, girls get married and conceive at an early age, have conservative nature towards husband and in-laws, moreover, conservative behavior towards seeking ante-natal care as well as lack of awareness are also responsible for the same. Saxena S et al¹³ studied socio-demographic profile of patients with pregnancy induced hypertension in a tertiary care centre and reported that the incidence of PIH is more common among lower socioeconomic strata of rural primigravida women in early age group during later weeks of gestation. Awareness regarding PIH and availability of easily accessible and affordable health care services to rural population and poor people is important which shall be helpful in reducing the PIH related morbidity and mortality. Duckitt K et al⁵ carried out analysis of risk factors for pre-eclampsia and reported that pre-existing diabetes and a pre-pregnancy BMI of ≥ 35 almost quadruple the risk; nulliparity, a family history of pre-eclampsia, and twin pregnancy almost triple the risk; and

maternal age ≥ 40 , a booking BMI of ≥ 35 , and a systolic blood pressure ≥ 130 at booking double the risk. Pre-existing hypertension, renal disease, chronic autoimmune disease, and ≥ 10 years between pregnancies increase the risk.

In the present study, emergency cesarean section was performed in 181 cases. Ye RW et al¹⁴ demonstrated the importance of use of cesarean section during delivery among women with PIH. It was found that moderate and severe PIH early developed during pregnancy could increase the risk of perinatal mortality while the cesarean delivery could decrease the risks in women with PIH.

CONCLUSION

In the present study, pregnancy induced hypertension was more prevalent in the age group <25 years and the majority of patients were primi and had educational status less than graduation. Younger age and less education can be attributed to the age itself or due to inadequate antenatal care and lack of awareness regarding antenatal care due to less education of the patient. Assessment of risk factors would identify women in early pregnancy who are at high risk of preeclampsia. Proper antenatal monitoring and time to time hospital visit can help to prevent adverse outcomes of pregnancy induces hypertension. Healthcare professionals can assess each pregnant woman's risk of pre-eclampsia at her booking visit and should plan antenatal care as per patient requirement.

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