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## Assessment of risk factors of pregnancy induced hypertension in a hospital: A case control 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. Present study aimed to assess risk factors for pregnancy induced hypertension.

**Material and Methods:** The present retrospective study was carried out among records of 150 cases of pregnancy induced hypertension reported to the Department of Obstetrics and Gynaecology, Mata Chanan Devi Hospital, Janakpuri, New Delhi-58. 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 statistically analyzed.

**Results:** The prevalence of hypertension in pregnancy was found higher in the age group <25 years (112 cases) as compared to ≥25 years age group. The majority of patients had educational status less than graduation. 132 patients were primi. and 18 patients were multigravida, out of which 12 patients had previous cesarean section. 3 patients had multiple pregnancy (twins). Family history of hypertension was present in 82 cases. 108 women who had their first conception within one year of their marriage. Out of 150 cases of pregnancy related hypertension, 139 was PIH, 4 was foetal distress with PIH, 1 was of pre-eclampsia, 2 was eclampsia, 1 was PIH with polyhydramnios, 1 was PIH and intra-uterine growth retardation (IUGR) and 2 was PIH with abruptio placentae.

**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. It is important to screen pregnant women for this condition, and if hypertension is present, close and regular monitoring is required.

**Keywords:** Hospital study, pregnancy induced hypertension; prenatal care; preeclampsia

### Introduction

Hypertension disorders of pregnancy are important leading causes of maternal, fetal and neonatal morbidity and mortality worldwide. Hypertension during pregnancy is classified under five categories; they are chronic hypertension, preeclampsia, chronic hypertension with preeclampsia, gestational hypertension (PIH) and transient hypertension. Gestational hypertension is also known as Pregnancy induced hypertension; is defined as new hypertension in a pregnant women after 20 weeks of gestation without the presence of protein in urine or other signs of preeclampsia and blood pressure of 140 mmHg systolic or diastolic pressure of 90 mmHg measured 2 times with at least a 6 hours interval. 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<sup>[1, 2]</sup>.

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<sup>[3]</sup>.

Hypertensive disorders of pregnancy are public health problems globally. Global studies showed that preeclampsia and eclampsia were associated with higher rates of maternal mortality, prenatal mortality, and morbidity, preterm and small for gestational age deliveries. Women with HDP are five times more likely to have perinatal death compared with women who have no hypertensive disorders of pregnancy. Pregnancy-induced hypertension complicates 10% of all pregnancies. Around 40,000 women, mostly from developing countries,

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die each year due to preeclampsia or eclampsia. Preeclampsia alone is estimated to account for about 40% to 60% of maternal deaths in developing countries.

Nobis PN *et al.* [4] 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 to assess major risk factors for pregnancy induced hypertension.

### Material and Methods

The present retrospective case control study was carried out among records of 150 cases of pregnancy induced hypertension reported to the Department of Obstetrics and Gynaecology, Mata Chanan Devi hospital, Janakpuri, New Delhi. After taking permission of institutional

ethics committee the project was started. Before collecting data, informed written consent was obtained from all the study participants. Risk factors assessed were in accordance with Duckitt K *et al.* [5] 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.

### Results

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

Variables		No. of cases of pregnancy induced hypertensive cases (n=150)
Age	<25 years	112
	≥ 25 years	38
Educational status	< graduation	126
	≥ graduation	24
Parity	Primi	132
	Multigravida	18
Previous cesarean section	Yes	12
	No	138
Multiple pregnancy	Yes	3
	No	147
Time period between present and previous pregnancy	<1 year	1
	>1 year	149
Family history of hypertension	Yes	82
	No	68
Time period b/w marriage & first conception	<1 year	108
	>1 year	42
Diagnosis	PIH	139
	Foetal distress with PIH	4
	Pre-eclampsia	1
	Eclampsia	2
	PIH with Polyhydramnios	1
	PIH and intra-uterine growth retardation (IUGR), PIH and abruptio placentae	1 2
Emergency cesarean section		90

The prevalence of hypertension in pregnancy was found higher in the age group <25 years (112 cases) as compared to ≥25 years age group (table 1). The majority of patients had educational status less than graduation. 132 patients were primi. And 18 patients were multigravida, out of which 12 patients had previous cesarean section. 3 patients had multiple pregnancy (twins).

Family history of hypertension was present in 82 cases. 108 women who had their first conception within one year of their marriage. Out of 150 cases of pregnancy related hypertension, 139 was PIH, 4 was foetal distress with PIH, 1 was of pre-eclampsia, 2 was eclampsia, 1 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 90 cases.

### Discussion

Pregnancy-induced hypertension is a frequent cause of maternal

and perinatal complications. 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.<sup>1</sup> 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 [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. The first risk factor which was commonly recorded even text book that is primipara.

Even various studies reported similar observation that in first pregnancy, the PIH is most frequently occurring. Prakash J *et al.* [6] reported 57% were primigravida in their hospital based study. Leppälähti S. *et al.* [7] 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 30years. 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 al.* [8] 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.

Abetew DF *et al.* [9] 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 al.* [10] 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 al.* [11] 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 al.* [12] 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 antenatal care as well as lack of awareness are also responsible for the same. Saxena S. *et al.* [13] 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 al.* [5] carried out analysis of risk factors for pre-eclampsia and reported that pre-existing diabetes and a pre-pregnancy BMI of  $\geq 35$  almost quadruple the risk; nulliparity, a family history of pre-eclampsia, and twin pregnancy almost triple the risk; and

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

Other risk factors like family history of hypertension, family history of diabetes mellitus and menstrual cycle history had no association with PIH in present study. But study form Qiu C *et al.* [2] and Tebeu PM [14] reported the strong association with family history of DM and PIH in their studies. Family history of DM was also found as strong associated risk factor by K R *et al.* [15] and Qiu C *et al.* [2]. Abetew DF *et al.* [9]. Reported the association with longer menstrual cycle with PIH. In present study it was not associated.

## Conclusion

The risk factors which present study has identified, they were past history of PIH and vegetarian diet, sociodemographic background, primipara, family history of hypertension, obesity, vascular abnormality and placental abnormality need to explore in larger community based cohort study. Proper antenatal monitoring and time to time hospital visit can help to prevent adverse outcomes of pregnancy induces hypertension. It is important to screen pregnant women for this condition, and if hypertension is present, close and regular monitoring is required.

## References

1. Kintiraki E, Papakatsika S, Kotronis G, Goulis DG, Kotsis V. Pregnancy-Induced hypertension. *Horm Athens Greece*. 2015; 14(2):211-23.
2. Qiu C, Williams MA, Leisenring WM, Sorensen TK, Frederick IO, Dempsey JC *et al.* Family history of hypertension and type 2 diabetes in relation to preeclampsia risk. *Hypertens Dallas Tex*. 1979. 2003; 41(3):408-13.
3. Muti M, Tshimanga M, Notion GT, Bangure D, Chonzi P. Prevalence of pregnancy induced hypertension and pregnancy outcomes among women seeking maternity services in Harare, Zimbabwe. *BMC Cardiovascular Disorders*. 2015; 15:111.
4. Nobis PN, Hajong Eclampsia A. In India Through the Decades. *Journal of Obstetrics and Gynaecology of India*. 2016; 66(Suppl 1):172-176.
5. Duckitt K, Harrington D. Risk factors for pre-eclampsia at antenatal booking: systematic review of controlled studies. *BMJ : British Medical Journal*. 2005; 330(7491):565.
6. Prakash J, Pandey LK, Singh AK, Kar B. Hypertension in pregnancy: hospital based study. *J Assoc Physicians India*. 2006; 54:273-8.
7. Leppälähti S, Gissler M, Mentula M, Heikinheimo O. Is teenage pregnancy an obstetric risk in a welfare society? A population-based study in Finland, from 2006-2011. *BMJ Open*. 2013; 3(8):e003225.
8. Silva LM, Coolman M, Steegers EA, Jaddoe VW, Moll HA, Hofman A, *et al.* Low socioeconomic status is a risk factor for preeclampsia: the Generation R Study. *J Hypertens*. 2008; 26(6):1200-08
9. Abetew DF, Enquobahrie DA, Dishu M, Rudra CB, Miller RS, Williams MA. *ISRN Obstet Gynecol*. Age at menarche, menstrual characteristics, and risk of preeclampsia, 2011; 472083.
10. Mehta B, Kumar V, Chawla S, Sachdeva S, Mahopatra D. Hypertension in Pregnancy: A Community-Based Study. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*. 2015; 40(4):273-278.

11. Hernandez-Diaz S, Toh S. Risk of preeclampsia in first and subsequent pregnancies: Prospective cohort study. *Brit Med J*. 2009; 18(338):2255.
12. Conde-Agudelo A, Belizan JM. Risk factors for pre-eclampsia in a large cohort of Latin American and Caribbean women. *Bjog*. 2000; 107:75-83.
13. Saxena S, Srivastava PC, Thimmaraju KV, Mallick AK, Dalmia K, Das B. Socio-demographic profile of pregnancy induced hypertension in a tertiary care centre. *Religion*. 2014; 47(67.14):51.
14. Tebeu PM, Foumane P, Mbu R, Fosso G, Biyaga PT, Fomulu JN. Risk factors for hypertensive disorders in pregnancy: a report from the maroua regional hospital, cameroon. *J Reprod Infertil*. 2011; 12(3):227-34.
15. Gandhi S KR, Rao V. Socio-demographic and other risk factors of pre eclampsia at a tertiary care hospital, karnataka: case control study. *J Clin Diagn Res JCDR*. 2014; 8(9):JC01-04.