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ASSESSMENT OF RISK FACTORS TO IDENTIFY THE HIGH RISK WOMEN FOR PREGNANCY INDUCED HYPERTENSION

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ABSTRACT

Pregnancy induced hypertension affects 2-10% of all pregnancy with results of many maternal and fetal complications. Early detection and treatment may reduce the complications in pregnancy outcome. The main aim of the study is to assess the risk factors causing pregnancy induced hypertension. Study was carried out in the multispecialty hospital in Tamilnadu, south India, for the period of 10 years from January 2003 to December 2012. Pregnant women diagnosed with pregnancy induced hypertension were included in the study. Diabetes mellitus, hypertension, renal disorder and autoimmune disease woman were not included in the study. Antenatal and perinatal data were collected from patient, family members, patient medical records and hospital database. SPSS statistical package version 20.0 was used for the statistical analysis. Paired't' test andBivariate correlation were used for various data analysis. Age, BMI, gravidity, nulliparity, primiparity and family history of diabetes mellitus shows significant influence on the development of pregnancy induced hypertension ($P<0.05$). The mean age of women was 26.55 ± 4.55 years.The mean BMI of GDM women was 25.60 ± 4.57 kg/m^2. The average gravidity of women was 1.63± 0.97. From our study we observed, Advancing age, increasing BMI, primigravida, nulliparity, primiparity and family history of diabetes shows an influence on the development of pregnancy induced hypertension. These risk factors are comparable with internationally documented risk factors. Assessing these risk factors provides an understanding to identify those women as high risk group for PIH.

INTRODUCTION

Pregnancy induced hypertension (PIH) is the most common complication of pregnancy throughout the world that affect 2-10%[1] of all pregnancy.PIH is a condition of elevated blood pressure level generally detected during pregnancy and become normal soon-after delivery, resulting with immediate and long-term effects to both mother and child.

Identifying women for possibility of PIH is depends on the presence of risk factors, PIH is usually confirmed after 20th week of pregnancy. But PIH can affect in any stage of gestation. The factors that can be influence the pregnant women to develop PIH includes age, BMI, gravidity, parity, family history and obstetric history[2,3].

Indeed the PIH resolves postpartum it causes various maternal and fetal morbidity and mortality. (Seizure, stroke, intra uterine growth retardation (IUGR), preterm delivery, hepatic and renal failure and death)[4]. Preeclamptic women have high risk for cardiovascular diseases, and their offspring may be at increased risk for cardiovascular diseases in adulthood[5].

The implication of this is that the women with PIH are at increased risk of future cardiac diseases as are their children. The early detection and adequate treatment reduce the potential complications to both mother and child. Better understanding of this complication may give effective strategies in identifying and care to women. Therefore we conducted a hospital based study to find the associated risk factors for the development of GDM.

MATERIALS AND METHODS

The study was approved by Institutional ethics committee (KMCH ETHICS COMMITTEE) to carry out the study in Kovai Medical Center and Hospital, Coimbatore, Tamilnadu. All the women were informed about the study and consent was obtained.

The pregnant women who diagnosed and treated for PIH were taken in to the study for the period of 10 years from January 2003 to December 2012. The study is carried out at Kovai Medical Center and Hospitals Pvt Ltd, Coimbatore, Tamilnadu, India, a 750 bedded multispecialty hospital. A pregnant woman diagnosed by physician as PIH is the basic criteria to include in the study. Diabetes mellitus, hypertension, renal disorder, autoimmune disease woman were excluded from the study.

Antenatal, perinatal and neonatal data were collected from patient, family members, patient medical records and hospital database. Maternal data includes demographic details, family history, past medical history, obstetric history, laboratory investigations and current diagnosis. Neonatal details included sex, weight, height, length, head circumference andapgar scores.

The following factors were considered as risk factors for the analysis, Age, Body Mass Index (BMI), family history of diabetes mellitus (DM) / Hypertension (HTN), gravidity and parity.

The definition and cutoff values for the Maternal and Fetal Analysis,

1. Age – The cutoff value for age is ≥ 25 years(≥ 25 years of age is high risk group and below 25 is low risk group)
2. BMI – The cutoff value for BMI is ≥25 (≥25 is high risk group and below 25 is low risk group).
3. Parity (nulliparity and primiparity women - high risk)
4. Family history of DM/HTN(positive history- high risk)
5. Apgar score is determined by evaluating the new born baby in five simple criteria on a scale from zero to two, then summing up the five values thus obtained. The resulting apgar score ranges from 0 to 10. Apgar score of 8 or above indicates it's a good healthy baby.
6. PIH – generic classification of Gestational hypertension, Preeclampsia and Eclampsia
7. Blood pressure – 20 percent excess of normal blood pressure

SPSS package version 20.0 for windows was used to do the statistical analysis. Paired 't' test was used to find out the control of blood pressure. Bivariate correlation (2-tailed) was used to find out the significance on development of PIH against risk factors, Regression- Curve estimation analysis was done to evaluate the advancing factors and its influence on early development of PIH. $P<0.05$ was considered as significant.

TABLE 1 - SHOWS THE AVERAGE VALUE OF MATERNAL CHARACTERISTICS

	Mean ± SD and Percentage	**P value**
Age(years)	26.55 ± 4.55	P < 0.009
Weight(kg)	63.51 ± 12.6	
BMI(kg/m^2)	25.60 ± 4.57	P < 0.000
Parity	0.35 ± 0.69	
Nulliparity	73.79%	P < 0.005
Primiparity	19.78%	P < 0.002
Multiparity	6.41%	P < 0.615
Gravida	1.63 ± 0.97	
Multigravida	41.71%	
Primigravida	58.28%	P < 0.020

RESULTS

1. General

Totally 187 women were diagnosed with PIH, of which 61 (33.62%) had Gestational hypertension, 125 (66.84%) had Preeclampsia. Total of 187 PIH women were given birth to 194 infants. The mean age of women was 26.55 ± 4.55 years. Most of the women fall between the age group of 22 to 25 years of age, which accounts for 40% of women and 5% of women were more than 35 years of old. The mean BMI was 25.60 ± 4.57 kg/m^2. Forty five percent of women found with overweight and 37% women were found to be ideal body weight.

The study of patient history revealed that 30.48% of women had family history of diabetes. 11.22% women had previous history of PIH and 2% women had previous history of GDM where as 55% of women doesn't have any history of PIH.

Regarding parity, 20% of women had one previous delivery and 6% of women had more than one previous delivery, where as 74% women have no previous history of delivery. Gravidity data shows 42% of women had at least one previous pregnancy and for 58% of women this is the first pregnancy.

Confirmation of PIH differed from woman to woman; the average week for diagnosis of PIH was 31.76 ± 6.71 weeks. For all the PIH women Blood pressure (BP) was monitored regularly and was controlled well.

2. Analysis

Age – shows significant influence on the development of PIH, most of the women found between the age of 20 to 25 years ($P<0.05$). When the age is increasing, the probability of early development of PIH is high ($P<0.05$).

BMI – shows significant influence on the development of PIH, most of women found between with linear to ideal body weight (from 20 to 24.99 kg/m^2) ($P<0.05$). When the BMI is increasing, the probability of early development of PIH is high ($P<0.05$).

Gravidity – significant correlation was found ($P<0.05$). Primigravida shows significant influence on the development of PIH than multigravida.

Parity – nulliparity and primiparity women shows significant influence on the development of PIH ($P<0.05$)

Family history – family history of DM shows influence on the development of PIH ($P<0.05$), but family history of HTN not.

DISCUSSION

A study done on 97,270 women with PIH found out that 37.4 % was over 30 years[6]. Several studies suggesting, younger and first pregnancy women are high risk to developing PIH. Study by Jasovic-sieveslea E etal,[7] reported that the age from 20 years of old largest number of primiparous women found with preeclampsia. In our study 17.44% of the study population was over 30 years of age, 43% of women fall between the age group of 25 to 29 years of old whereas 39% of women were below 24 years of old and. Our result is similar with above mentioned study; most of women are below 25 years of age and above 30 years of age are less.

One cohort study with 16,582 women with PIH found that the obesity is not associated with the development of PIH[8]. Other study conducted in Karachi hospital reports that the development of PIH is high with obese women than non-obese women[9]. In our study percentage of obese women are less compare to non-obese women.

Study by Zuspanet al[10] stated that primiparous women have 4 to 5 times higher risk than multiparous women to develop PIH. A study on the risk factors and clinical manifestation of preeclampsia in Norway found out that out of 323 preeclampsia patients 64% were nulliparous[11]. In our study the nulliparous women are more with 74%and only 20% women are primiparous.

Women have the family history of diabetes or hypertension are very risks to develop preeclampsia[12]. A study by uzmashamzi et al[13]with PIH women reported that the family history of diabetes mellitus is associated with the development of preeclampsia, and found with 43% of women have family history of diabetes. In our study 30% of women have family history of DM and 31% of women have family history of hypertension.

CONCLUSION

Age, BMI, primigravida, nulliparity and family history of diabetes shows an influence on the development of PIH. Advancing age and BMI are added risk to the development of PIH. These risk factors are comparable with internationally documented risk factors. Assessing these risk factors provides an understanding to identify those women as high risk group for PIH.

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