

Original Research Article

Maternal and Perinatal Outcome in Hypertension Complicating Pregnancy between Booked and Referred Cases

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	International Archives of Integrated Medicine, Vol. 6, Issue 9, September, 2019.	
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	Available online at http://iaimjournal.com/	
	ISSN: 2394-0026 (P)	ISSN: 2394-0034 (O)
	Received on: 15-08-2019	Accepted on: 24-08-2019
	Source of support: Nil	Conflict of interest: None declared.
How to cite this article: Katadi Venkata Sudha Madhuri, Gokapai Madhuri, Kolati Srinivas Rao. Maternal and Perinatal Outcome in Hypertension Complicating Pregnancy between Booked and Referred Cases. IAIM, 2019; 6(9): 140-147.		

Abstract

The present study was conducted in Obstetrics and Gynecology Department in King George Hospital, Andhra Medical College on 300 antenatal women with hypertensive disorders. Patients were categorized according to National Blood Pressure Education Programme Work Group definitions as gestational hypertension, mild preeclampsia and severe preeclampsia. Blood pressure was measured using a mercury sphygmomanometer. Korotkoff sounds were monitored to measure diastolic blood pressure. Korotkoff 5 was taken as diastolic blood pressure. Data collected included socio-demographic details, obstetric history, presenting complaints, gestational age at delivery, mode of delivery, maternal complications, condition of baby and fetal outcome. Results were analyzed based on various parameters such as admission gestational age, gestational age at delivery, mode of delivery, severity of hypertension. Perinatal outcomes like IUGR, prematurity, 5 minute APGAR, etc. were analyzed in both Booked and Referred cases. Comparison between booked and referred cases was made employing chi-square test. P-value < 0.05 was considered as statistical significance.

Key words

Hypertension, Booked cases, Referred cases.

Introduction

Hypertensive disorders are the most common medical disorders encountered during pregnancy, occurring in approximately 7% to 10% of all pregnancies [1]. They are associated with significant maternal and perinatal morbidity and mortality and have a wide spectrum of presentation, ranging from minimal elevation of blood pressure to severe hypertension with multiple organ dysfunctions. Among the hypertensive disorders, the pre-eclampsia syndrome, either alone or superimposed on chronic hypertension, is the most dangerous. Eclampsia is the convulsive form of pre-eclampsia and affects 0.1% of all the pregnancies [2]. New onset non proteinuric hypertension during pregnancy, termed gestational hypertension, is followed by signs and symptoms of pre-eclampsia almost half the time. Women who develop pre-eclampsia in pregnancy are at greater risk of cardiovascular and cerebrovascular events even years after their pregnancies. Hypertension complicating pregnancy is a major cause of preterm births resulting in perinatal deaths of fetuses. In low income and middle income countries, preeclampsia and eclampsia are associated with 10-15% of direct maternal deaths. WHO estimates the incidence of preeclampsia to be seven times higher in developing countries (2.8% of live births) than in developed countries (0.4%) [3]. Incidence of eclampsia in developing nations varies widely, ranging from 1 case per 100 pregnancies to 1 case per 3448 pregnancies. For patients obtaining prenatal care, the incidence is about 1 in 800 patients [4]. The incidence of maternal mortality due to HDP is estimated at 20-33% [4]. Prevention of any disease process requires the availability of methods for prediction of those at high risk for the disorder. Although numerous clinical and biochemical tests have been proposed for prediction or early detection of preeclampsia, most remain unrealistic for general use in most developing

countries. At present, there is not a single reliable and cost-effective screening test for preeclampsia which can be recommended for use in most developing countries [5]. Although some studies on uterine artery Doppler and first-trimester maternal serum markers for early detection of preeclampsia have shown promise, there is not enough evidence to suggest their routine use in clinical practice, more so in resource poor settings [6].

The purpose of the present study was to evaluate the Maternal and Perinatal Outcome in Hypertension Complicating Pregnancy between Booked and Referred Cases.

Materials and methods

It was prospective comparative study carried out in 300 antenatal women with high blood pressure recordings in Department of Obstetrics and Gynecology, King George Hospital, Andhra Medical College, Visakhapatnam. Those pregnant women who had at least 3 antenatal checkups at KGH are labeled as booked cases.

Pregnant women who had no antenatal checkups at KGH, but referred from other hospitals were labeled as Referred cases.

Out of 300 antenatal women, 136 were booked cases and 164 were referred cases. Study was carried on patients with hypertensive disorders from December 2016 to January 2018.

Inclusion Criteria

- Singleton pregnancies with hypertension.
- Period of gestation > 32 weeks

Exclusion Criteria

- Twin pregnancies.
- Chronic hypertension.
- Pre-existing renal diseases.
- Diabetes mellitus.
- Cardiovascular diseases.
- Other systemic conditions.

Results

In the present study, total 300 pregnant women with high blood pressure recordings were included in the study. Of the 300 hypertensive patients, 136 patients (45.3%) are booked cases at KGH and 164 patients (54.6%) were referred cases.

In the present study, age group for both the groups ranged between 17 to 41 years. Mean age for booked group was 25.11 ± 7.91 years and mean age for referred group was 24.97 ± 7.80 years. Most of the cases in both the groups were

less than 20 years of age. In booked cases 47.07% of the cases and in referred cases 48.78% of the cases were below 20 years of age. P-value is >0.05 ; hence it was not statistically significant (**Table – 1**).

In the present study, most of the cases of both the groups belonged to low socioeconomic status. 91.18% of booked cases and 96.34% of referred cases belonged to low socioeconomic status. P-value was >0.05 , hence it was not statistically significant (**Table – 2**).

Table – 1: Distribution of study participants based on age group.

Age Group	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P value
<20 yrs	64 (47.07%)	80 (48.78)	0.91
20-29 yrs	20 (14.70%)	22 (13.42)	
30-39 yrs	46 (33.82%)	58 (35.36%)	
>40 yrs	6 (4.42%)	4 (2.44%)	

Table– 2: Distribution of study participants based on Economic status.

Economic status	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
BPL	124 (91.18%)	158 (96.34%)	0.10
APL	12 (8.82%)	6 (3.66%)	

Table – 3: Distribution of study participants based on Educational status.

Educational status	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Literate	58 (42.65%)	32 (19.52%)	0.001
Illiterate	78 (57.35%)	132 (80.48%)	

Table – 4: Distribution of Study Participants Based On Parity.

Parity	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Primi	70 (51.47%)	112 (68.29%)	0.004
Multi	66 (48.53%)	52 (31.71%)	

Table – 5: Distribution of study participants based on Place.

Area	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Rural	50 (36.76%)	88 (53.65%)	0.005
Urban	86 (63.24%)	76 (46.34%)	

Table– 6: Distribution of study participants based on gestational age.

Gestational Age	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Full term	106 (77.94%)	98 (59.75%)	0.001
Pre term	30 (22.06%)	66 (40.25%)	

Table– 7: Distribution of study participants based on mode of delivery.

Mode of delivery	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Vaginal	86 (63.24%)	70 (42.68%)	0.006
Caesarean	50 (33.76%)	94 (57.32%)	

Table– 8: Distribution of study participants based on mode of delivery.

Mode of delivery	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Vaginal			
Spontaneous	26 (19.11%)	14 (8.54%)	0.20
Induced	60 (44.12%)	56 (34.15%)	
Caesarean			
Emergency	20 (14.71%)	76 (46.34%)	0.004
Elective	30 (22.06%)	18 (10.97%)	

Table – 9: Distribution of study participants based on severity of hypertension.

Severity of hypertension	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P value
Gestational hypertension	100 (73.53%)	46 (28.05%)	0.001
Pre-eclampsia	30 (22.06%)	78 (47.56%)	
Imminent eclampsia	6 (4.41%)	30 (18.29)	
Eclampsia	0	10 (6.09)	

Table – 10: Distribution of study participants based on maternal complications.

Maternal complications	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)
Post partum hemorrhage	4 (2.94%)	14 (8.53%)
Abruptio- placenta	2 (1.47%)	10 (6.09%)
Retinal affection	0	4 (2.43%)
Renal failure	0	2 (1.21%)
HELLP	0	4 (2.43%)
Hepatic failure	0	2 (1.21%)
DIC	0	2 (1.21%)
Maternal death	0	2 (1.21%)

Table – 11: Distribution of study participants based on maturity of neonate.

Maturity of Neonate	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Term	119 (87.5%)	98 (59.7%)	0.001
Preterm	17 (12.5%)	66 (40.2%)	

Table – 12: Distribution of study participants based on fetal weight.

Fetal weight in Kgs	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
< 2.5 kgs	21 (15.4%)	71 (43.3%)	0.001
>2.5 kgs	115 (83.6%)	93 (47.7%)	

In the present study, illiterates were more in literates. 57.35% (78) of booked cases and booked and referred cases when compared to 80.48% (132) of referred cases were illiterates.

P-value was <0.05 which was statistically significant (**Table – 3**).

In the present study, hypertensive disorders were more in primigravidas in both the groups. 48.53% of booked cases and 31.71% of referred

cases were muligravidas. 51.47% of the booked cases and 68.29% of referred hypertensive cases were primigravidas. P-value was <0.05, the difference was statistically significant (**Table – 4**).

Table – 13:Distribution of study participants based on perinatal morbidity.

Perinatal morbidity	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Intrapartum meconium stained liquor	21(15.4%)	36(21.95%)	
APGAR at 5 minutes			
<7	6 (4.4%)	22 (13.2%)	0.01
>7	130 (94.6%)	142 (78.6%)	
NICU admission	33 (24.4%)	84 (51.4%)	

Table – 14:Distribution of study participants based on perinatal mortality.

Perinatal mortality	Booked cases (N=136) (45.3%)	Referred cases (N=164) (54.6%)	P-value
Intra uterine fetal death	2 (1.5%)	15 (9%)	0.45
Early neonatal death	7 (5.14%)	20 (12.1%)	
Total mortality	9 (6.6%)	35 (20.8%)	

In the present study, most of the referred cases were from rural area. 36.76% of booked cases and 53.65% of referred cases were from rural area. 63.24% of booked cases and 46.34% of referred cases were from urban area. P-value was <0.05, it was statistically significant (**Table – 5**).

Table - 6 depicts that hypertensive cases that delivered preterm babies were more in referred group when compared to booked group. 77.94% of booked cases and 59.75% of referred cases delivered after 37 weeks period of gestation. 22.06% of booked cases and 40.25% of referred cases delivered preterm babies. P-value was <0.05, and this was statistically significant.

In the present study, vaginal delivery rate was 63.24% in booked hypertensive cases and 42.68% in referred cases. Caesarean section rate revealed that 36.76% are booked cases and 57.32% are referred cases majority of deliveries in referred cases resulted in caesarian section (**Table – 7**).

Table - 8 depicts that in booked group elective caesarean sections were more compared to emergency caesarean sections. In referred group emergency caesarean sections were more when compared to elective caesarean sections. In booked and referred cases induced vaginal deliveries were more compared to spontaneous vaginal deliveries.

Table - 9 shows that severity of hypertension was more in referred group compared to booked cases. Imminent eclampsia and eclampsia were 18.29% and 6.09% in referred cases and they were 4.41% and 0% in booked cases.

In present study, maternal complications are more in referred cases compared to booked cases. In booked cases, 2.94% cases had PPH and 1.47% cases had abruption placenta. In referred cases, 8.53% cases had PPH, 6.09% cases had abruption placenta, 2.43% cases had retinal affections, 1.21% cases had renal failure, 2.43% cases had HELLP syndrome, 1.21% cases

had Hepatic failure, 1.21% cases had DIC and 1.21% cases are maternal deaths (**Table – 10**).

In present study, both the groups booked and referred cases there were more number of term babies. Preterm babies were seen in 12.4% in booked cases and 40.2% in referred cases. P values was <0.001 which was statistically significant (**Table – 11**).

Table - 12 shows that, in the present study, low birth weight babies were found in 15.6% in booked cases and 43.4% in referred cases p-values was <0.001 which was statistically significant.

Table - 13 showed that 1.4% of booked cases and 4.2% referred cases had intrapartum meconium stained liquor., 4.4% of booked cases and 13.2% of referred cases had APGAR<7., 24.4% of booked cases and 51.4% of referred cases had NICU admission. P – value was less than 0.05 and this difference was statistically significant.

In present study, 1.4% of booked cases and 9% of referred cases had Intrauterine deaths. 5.14% of booked cases and 12.1% of referred cases had early neonatal deaths. Total perinatal mortality was 6.6% in booked cases and 20.8% in referred cases (**Table – 14**).

Discussion

Of 300 hypertensive women, 136 cases are booked cases with regular antenatal checkups at KGH and 164 are referred cases without antenatal checkups at KGH. 47.07% of booked cases and 48.78% of referred cases are below 20 years of age. In the present study, mean age is 25.11+ 7.91 years in booked group and 24.97+ 7.80 years in referred group. The extreme ages of reproductive years are well-known risk factors for hypertension during pregnancy with high incidence rates in teenagers. Many authors [7, 8, 9] have identified young age as a risk factor for hypertension during pregnancy [10].

91.18% of booked cases and 96.34% of referred cases belong to low socioeconomic status. In the present study, illiterates are more in booked and referred cases when compared to literates. 57.35% (78) of booked cases and 80.48 % (132) of referred cases are illiterates. 48.53% of booked cases and 31.71% of referred cases are multigravidas. 51.47% of the booked cases and 68.29% of referred hypertensive cases are primigravidas. 36.76% of booked cases and 53.65% of referred cases are from rural area. 63.24% of booked cases and 46.34% of referred cases are from urban area. 77.94% of booked cases and 59.75% of referred cases delivered after 37 weeks period of gestation. 22.06% of booked cases and 40.25% of referred cases delivered preterm babies. Similar rates were found by Yadav, et al. (1997) [11], Bangal, et al. (2011) [12] who found the preterm delivery rate to be 28.8% and 37% in cases with hypertension respectively.

Vaginal delivery rate was 63.24% in booked hypertensive cases and 42.68% in referred cases. Caesarean section rate revealed that 36.76% are booked cases and 57.32% are referred cases majority of deliveries in referred cases resulted in caesarian section. In booked group elective caesarean sections are more compared to emergency caesarean sections. In referred group emergency caesarean sections are more when compared to elective caesarean sections. In booked and referred cases induced vaginal deliveries are more compared to spontaneous vaginal deliveries. Hemalatha Devi and Bheema Bai (2018) [13] reported 27.97% mothers had vaginal delivery, and higher percentage (71.32%) underwent cesarean section. Pregnancy was terminated by induction in 53.8% cases, 47.05% of whom had cesarean delivery. Elective cesarean delivery was performed in 18.53% cases.

Severity of hypertension is more in referred group compared to booked cases. Imminent eclampsia and eclampsia are 18.29% and 6.09% in referred cases and they are 4.41% and 0% in booked cases. In present study, maternal

complications are more in referred cases compared to booked cases. In booked cases, 2.94% cases had PPH and 1.47% cases had abruption placenta. In referred cases, 8.53% cases had PPH, 6.09% cases had abruption placenta, 2.43% cases had retinal affections, 1.21% cases had renal failure, 2.43% cases had HELLP syndrome, 1.21% cases had Hepatic failure, 1.21% cases had DIC and 1.21% cases are maternal deaths. Similar trends of results were reported by Hemalatha Devi and Bheema Bai (2018) [13].

Preterm babies are seen in 12.4% in booked cases and 40.2% in referred cases. In the present study, low birth weight babies are found in 15.6% in booked cases and 43.4% in referred cases. 1.4% of booked cases and 4.2% referred cases had intrapartum meconium stained liquor., 4.4% of booked cases and 13.2% of referred cases had APGAR<7., 24.4% of booked cases and 51.4% of referred cases had NICU admission. A study by Yadav, et al. [11] reported preterm deliveries in 28.8%. Fatemeh, et al. [9] reported IUGR in 27.5% of the neonates in severe pre-eclampsia group whereas Yucesoy, et al. (2005) [10] reported IUGR in 29.4% and oligo-hydramnios in 7.5% cases [12]. In a study by Chaitra, et al. [15] the incidence of preterm delivery was noted in 28.67%, intrauterine growth restriction in 14.68% of births, low birth weight in 26.57% and intrauterine fetal demise in 2.09%. The incidence of preterm deliveries was 28.9%. The reason for the high incidence of preterm is probably due to induction of labor for severe preeclampsia [13].

1.4% of booked cases and 9% of referred cases had intrauterine deaths. 5.14% of booked cases and 12.1% of referred cases had early neonatal deaths. Total perinatal mortality was 6.6% in booked cases and 20.8% in referred cases. In the study by Vats and Paul the NICU admission rate was 11.2% and perinatal mortality was 10% [16]. In another study by Hemalatha devi and Bheema Bai revealed that early neonatal deaths occurred in 4 cases (2.2%) and the number of stillbirths

was 20 (11.11%) [13]. The perinatal death rate was 13.3%.

Conclusion

The present study revealed that maternal and perinatal complications associated with hypertensive disorders are more in referred cases when compared with booked cases. The provision of early adequate antenatal care, hospital delivery, timely recognition of complications and management can reduce the maternal and perinatal mortality. Incidence of maternal complications can be decreased with improved antenatal care and intrapartum management. In this study, it has been found out that various factors such as poverty, illiteracy, economic status have significant impact on maternal and child health in our country. Early detection of high risk cases by well trained personnel, timely referral when appropriate to advanced tertiary care centres, timely treatment of complications, correct training of mothers about fertility age, importance of care during pregnancy and strengthening of neonatal intensive care units may lead to improved fetal and maternal outcome. Maternal health care should be easily available for poor and illiterate community. Health education and public awareness programmes should be arranged at community level itself.

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