ORIGINAL ARTICLE

Comparison of Maternal Hypotension after administration of Labetalol versus Hydralazine in treating patients having Severe Pregnancy Induced Hypertension

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ABSTRACT

Aim: To compare the frequency of maternal hypotension after administration of intravenous labetalol versus intravenous hydralazine in treatment of pregnancy induced hypertension

Study design: Randomized Controlled trial was carried out in Unit I, Department of Obstetrics and Gynecology, Lahore General Hospital / Ameerud Din Medical College, Lahore in duration of 6 months from 1.8.2016 to 31.1.2017in 100 cases, 50 cases in each group by Non-probability Purposive sampling

Results: Maternal hypotension was noted in 45(45%) of women and 55(55%) were without this. There was significant difference in maternal hypotension in both groups (p-value <0.05). Out of the 45 patients suffering hypotension 35(77.8%) were in the hydralazine group and only 10(22.2%) were from the labetalol group.

Conclusion: Hence labetalol is a more safe treatment for maternal hypertension as compared to hydralazine as causing hypotension in comparatively lesser patients.

Keywords: Hydralazine,Labetalol, Hypertensive crisis in pregnancy

INTRODUCTION

Gestational hypertension (GH) is one of the several causes of hypertension in pregnant women. It occurs in about 6% of pregnancies[1]. Hypertensive disorders in pregnancy is one of the leading causes of maternal deaths. PIH is the reason of 15.7% of deaths of pregnant patients in the United States[2].

Now it is a generally agreed that females with PIH should be given antihypertensive drugs to lower BP.Treatment should be expeditious and occuras soon as possible within30-60minutes of confirmed severe hypertension to reduce the risk of maternal stroke. Intravenous Labetalol and Hydralazine are considered as first line treatment drugs in the management of acute onset, severe hypertension in pregnancy and postpartum period[3].

If the BP is reduced rapidly it may cause significant morbidity in severe hypertensivepatients due to a rightward shift occurring in the pressureautoregulatory curve of the arteries[4].The aim of treatment is to bring a gradual reduction in BP to a level that is safe for the mother and fetus, andavoiding at the same time any rapid drop that can cause problems such as maternal dizziness or fetal distress[5].

Rationale of this study is to compare the frequency of maternal hypotension after administration of intravenous hydralazine with intravenous labetalol for treatment of pregnancy induced hypertension (PIH). Literature is evident that labetalol has early effect to control BP and cause less maternal hypotension as compared to hydralazine but there is a controversy in results as well. Hydralazine is easily available and that's why obstetricians give i/v hydralazine which is hazardous for mother as well as for fetus. This study is conducted to confirm the rate of maternal hypotension after administering i/v labetalol versus i/v hydralazine, so that in future we will have a better management option for treatment of PIH with fewer side effects

MATERIALS &METHODS

Randomized Controlled trial was carried out in Unit I, Department of Obstetrics and Gynecology, LahoreGeneral Hospital / Ameer-ud-Din Medical College, Lahore in duration of 6 months from August 2016 to January2017 in 100 cases, 50 cases in each group by Non-probability Purposive sampling.

Patients were divided into two equal groups (H:L) by using lottery method. Patients in group H (Hydralazine) was given an intravenous hydralazine 5-10mg in bolus and dose was repeated after every 20 minutes up to maximum dose of 30mg. Group L (Labetalol)patients was given an intravenous bolus infusion of labetalol 20mg. The dose was increased every 10 minutes by 40 and 80mg up to maximum dose of 300mg. BP was noted by using sphygmomanometer after every 10-20 minutes till 60

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minutes after administration of drugs to observe maternal hypotension.

Inclusion Criteria:

- Patients of age range 20-35.
- Singleton pregnancy (through USG).
- Parity<5.
- Patients with >20 weeks of gestation with pregnancy induced hypertension (as per operational definition).

Exclusion Criteria:Following pregnant females were excluded from study

- Chronic Hypertension and using any antihypertensive (was assessed through history and medical record)
- Female having an abnormal heart rate or any other cardiac problem (was assessed through ECG)
- Female having history of asthma
- Already on treatment for PIH or eclampsia/pre-eclampsia in last 72 hours.
- Female allergic to either hydralazine or labetalol (was assessed through history and medical record)

Data was entered and analyzed through SPSS 10. Quantitative variables like age and gestational age was calculated as mean+SD. Qualitative variables like parity and maternal hypotension was presented as frequency and percentage. Chi-square was used to compare the frequency of maternal hypotension in both groups. P-value <0.05 was considered as significant.

RESULTS

During our 6 months study, 100 patients were selected,50 in each group,the Hydralazine group (H) and the Labetalol group(L). The following results were obtained:

The mean age of the women was 27.99±5.11 (Table 1). When the mean age for both groups was evaluated individually it was 27.71±5.18 for hydralazine group and 28.24±5.09 was for labetalol group. Mean gestational age was 28.07±4.61 (Table 2). For hydralazine group it was 27.50±4.68 and for labetalol group it was found to be 28.64±4.52. Mostly the women presenting were primigravidas (40%) and with second pregnancy (44%) (Table 3).

Table 1: Distribution according to Age

Total	Mean	Standard deviation
50 H Group	27.71	5.18
50 L Group	28.24	5.09
100	27.99	5.11

Table 2: Distribution according to Gestational Age

Total	Mean	Standard deviation
50 H Group	27.50	4.68
50 L Group	28.64	4.52
100	28.07	4.61

Table 3: Distribution according to Parity

Gravida	Frequency	Percent
1	40	40.0
2	44	44.0
3	10	10.0
4	6	6.0
Total	100	100.0

Table 4: Distribution according to Hypotension

Maternal Hypotension	Frequency	%age
Yes	45	45
No	55	55

Maternal hypotension was noted in 45(45%) of women and 55(55%) were not having this,35 in hydralazine group and 10in labetalol group(Table 4). There was significant difference in maternal hypotension in both groups (p-value <0.05)

Table 5: Maternal Hypotension - GROUP Crosstabulation

Maternal hypertension	Group		Total
	I/V hydralizine	I/V labetalol	
Yes	35(77.8%)	10(22.2%)	45(100%)
No	15(27.3%)	40(72.7%)	55(100%)

P-value= <0.05

DISCUSSION

The occurrence of hypertension in pregnant patients is around 12-22%[8]. The second common cause of maternal morbidity and mortality in the United States is Hypertension in pregnancy[9]..Hypertension in its severe form is also an important major risk factor for fetal morbidity and mortality[9]. More than 50,000 maternal deaths per year are caused by preeclampsia and eclampsia around the world.

It is now generally agreed that if antihypertensive treatment is given to acutely lower severe hypertension maternal and fetal risks are decreased.[4] . So the control of raised blood pressure is necessary for pregnant women with hypertension. The thresh-hold commonly used for treatment is a diastolic blood pressure of 110 mmHg or higher, and the systolic higher or equal to 160 mmHg. This is the recommendation of the National High Blood Pressure Education Program[9,10].

Hydralazine and Labetalol in injectable form are considered as the first-line treatment in managing women of acute , severe hypertension in pregnancy and postpartum perriod[3,11]. The antihypertensive of choice, for the pregnant women with severe hypertension, for a long time was onlyhydralazine. It has many common side effects that mimic symptoms like that of severepreeclampsia. Many clinical trials have been carried out some of which showed that hydralazine is more effective but causes more maternal hypotension as compared to the hypotension caused by labetalol (66.67% vs. 16.67%,

p=0.007) with RR 3.29; however, these results conflict with some studies that showed insignificant difference between both drugs as hydralazine showed maternal hypotension in 2% cases and labetalol showed in 0 cases, p-value>0.05[6,7].

Labetalol is also used in intravenous form in treating acute hypertensive pregnant patients as a first line drug. It has lesser side effects, but there are some risks of neonatal bradycardia[4]. Only one case was reported to have persistence of severe hypertension in the patients taking labetalol[6].

A similar study was carried out in Panama in 2014, on Hydralazine vs Labetalol for treatment of severe hypertensive disorder in pregnancy. It showed that both drugs have similar efficacy and adverse effects. However a similar study in India showed no difference in efficacy but the adverse effects of hydralazine were significantly higher.

Our study likely represents an estimate of the frequency of hypotension during treatment of acute hypertension in the in-patient setting with intravenous drugs. The study compares the efficacy of two antihypertensive in their i/v.form for the treatment of severe hypertension in pregnancy. This shows that both drugs meet the criteria of an antihypertensive drug .[139) but it Is Labetalol which is found to be more effective for maternal hypertensionas it causes less side effect of hypotension in only 10 patients (22.8%) as comparedto hydralazine which caused hypotension in 35 patients(77.2%).

CONCLUSION

Hence it is concluded that labetalol is more effective in treatment of hypertension as compared to hydralazine when considering its side effect of hypotension.It is a better drug than hydralazine, that rapidly controls hypertension without causing significant maternal hypotension or fetal side effects.

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