Academic Sciences Asian Journal of Pharmaceutical and Clinical Research

Vol 5, Suppl 3, 2012 ISSN - 0974-2441

Research Article

STUDY ON ANTI-HYPERTENSIVES IN PREECLAMPSIA

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Received:27 April 2012, Revised and Accepted:24 June 2012

ABSTRACT

Pre-eclampsia is a multi-organ system disorder that occurs after the 20th week of gestation in pregnancy and is characterized by hypertension and proteinuria with or without edema. It is a major cause of morbidity and mortality for the woman and her child. The aim of this study was to investigate the efficiency of the short-term treatment with antihypertensives in women with preeclampsia and to evaluate the maternal and neonatal outcomes. In present study, the higher incidence of preeclampsia is seen in primigravidas. After the use of antihypertensives, the systolic BP reduced from 150.58 ± 16.97 mmHg (mean ± SD) to 132.5 ± 11.35 mmHg (p-value <0.0001). Diastolic BP before and after treatment were 100.07 ± 11.83 mmHg and 85.19 ± 8.52 mmHg respectively (p-value < 0.0001). By examining the neonatal outcome, it is observed that 7.6 % neonates developed fetal distress, intrauterine growth retardation (IUGR) (5.7 %), low birth weight (LBW) babies (5.7 %) and 1.92 % neonatal death occurred. Only lesser percentage of fetal or neonatal adverse effects were occurred in the patients who is receiving antihypertensives. Among antihypertensives used, methyldopa with nifedipine combination is much effective in controlling blood pressure with minimal maternal and neonatal adverse effects in preeclamptic patients.

Keywords: Antihypertensives, Pre-eclampsia, Neonatal outcome

INTRODUCTION

About 1/5 th of all pregnancies are complicated by some form of hypertension. In the developed world maternal deaths associated with hypertensive disorders of pregnancy have come to occupy first place. Severe pre-eclampsia and eclampsia are important causes of maternal and fetal morbidity and mortality worldwide [1]. Preeclampsia is a multisystem disorder of the mother that affects the fetus because of uteroplacental Insufficiency [2]. It is defined as occurrence of hypertension in combination with proteinuria developing after 20 weeks gestation in a previously normotensive non proteinuric patient [3]. Preeclampsia is characterized by the triad of hypertension, proteinuria, and edema but these findings are not specific. Preeclampsia is considered severe when proteinuria exceeds 4gm/24 hrs, blood pressure is 160/110 and/or severe headache, visual disturbances or epigastric pain is noted [4].

Risk factors for preeclampsia include medical conditions with the potential to cause microvascular disease (e.g., diabetes mellitus, chronic hypertension, vascular and connective tissue disorders), antiphospholipid antibody syndrome, nephropathy, twin pregnancies, primiparity, previous PE and obesity. A family history of PE increases the women's risk, suggesting a possible genetic predisposition [5,6,7]. Other risk factors are associated with pregnancy itself or may be specific to the mother or father of the fetus [6,7].

The challenge in using antihypertensive drugs in pre-eclampsia is to reduce blood pressure to assure maternal safety, while at the same time not compromising uteroplacental perfusion. The ideal antihypertensive drug for treatment of severe hypertension in pregnancy should be potent, rapidly acting, controllable and without detrimental maternal or foetal side effects. The aim of this study was to investigate the efficiency of the short-term treatment with antihypertensives in women with preeclampsia and to evaluate the maternal and neonatal outcomes.

MATERIALS AND METHODS

Study conducted in obstetric and gynecologic in-patient department of Government Headquarters Hospital, Erode and Srimathi Hospital, Erode. Permission for the study was obtained from clinical ethics committee and scientific boards of the participating hospital. Informed consent form was obtained from all participating pregnant women, after they had been given oral and written information about study protocol. 52 pre-eclamptic patients participated in the study for 6 months. Their hospital case records were also referred to obtain detailed information about their demographic data, clinical findings, laboratory investigations and various drugs prescribed.

RESULTS AND DISCUSSION

Among the study population (544) it was found that only 9.5% (52 numbers) of the patients have got preeclampsia [8] . In this study various age groups were observed that ranges between 18 to 38 years, but predominant was in the younger age group between 18 to 26 years (59%) [9,10]. It's also found that majority of this condition is seen in primigravidas (46%) followed by second (33%), third (15%), fourth (4%) and fifth gravidas (2%) (Table 1). Duley *et al.,* reported in their study that higher rates of preeclampsia are found in first pregnancies. In present study, the higher incidence of preeclampsia in primigravidas correlates with the report of Sachdeva *et al*. [11].

Table 1. Gravidity Wise Distribution of Patients With Preeclampsia

Gravida	Number of patients (n= 52)	Percentage (%)
Primi	24	46
Second	17	33
Third	8	15
Fourth	2	4
Fifth	1	2

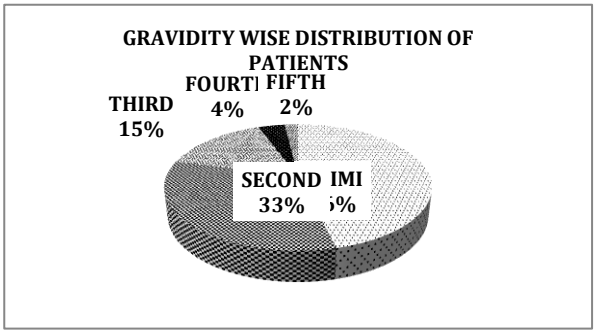

Figure 1. Gravidity Wise Distribution of Patients with Pre-eclampsia

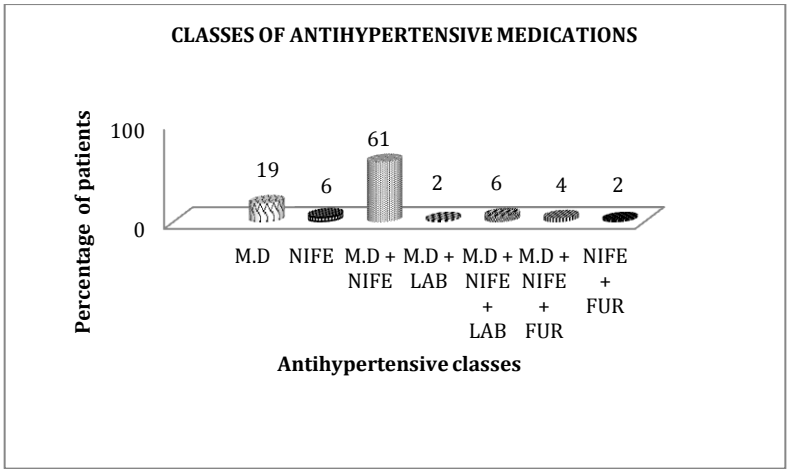

Figure 2. Drugs Prescribed For Management of Pre-eclampsia
M.D- Methyldopa; NIFE- Nifedipine; LAB- Labetalol; FUR- Furosemide

Table 2. Systolic and Diastolic BP (Before and After Treatment)

Systolic /Diastolic BP	Before treatment (mm Hg)	After treatment (mm Hg)	p-value
Systolic BP	150.58±16.97	132.5±11.35	< 0.0001
Diastolic BP	100.07±11.83	85.19±8.52	< 0.0001

Table 3. Systolic and Diastolic BP (Before and After Treatment) for Methyl dopa + Nifedipine Group

Systolic/Diastolic BP	Before treatment (mm Hg)	After treatment (mm Hg)	p-value
Systolic BP	153.43±17.7	134.37±12.16	< 0.0001
Diastolic BP	102.31±13.27	85.93±7.56	< 0.0001

In present study, it is found that the use of anti-hypertensive drugs had reduced the systolic and diastolic blood pressure markedly. After the use of antihypertensives, the systolic BP reduced from 150.58 ± 16.97 mmHg (mean ± SD) to 132.5 ± 11.35 mmHg (p-value <0.0001). Diastolic BP before and after treatment were 100.07 ± 11.83 mmHg and 85.19 ± 8.52 mmHg respectively (p-value < 0.0001) (Table 2). Among all antihypertensives, 61% patients were prescribed with methyldopa with nifedipine combination. In this treatment group, systolic BP reduced from 153.43 ± 17.7 mmHg (mean ± SD) to 134.37 ± 12.16 mmHg (p-value < 0.0001) and diastolic BP from 102.31 ± 13.27 mmHg to 85.93 ± 7.56 mmHg (p-value < 0.0001) (Table 3). Similarly, significant reduction in systolic and diastolic BP after the use of methyl dopa with nifedipine combination have been reported by Jayasutha *et al.*[12].

The laboratory parameters of patients taken were hemoglobin, proteinuria, serum glutamic oxaloacetic transaminase (SGOT), serum glutamic pyruvic transaminase (SGPT), uric acid, urea, creatinine and platelet count. The laboratory data of the patients before and after treatment were compared. It is found that liver enzymes like SGOT, SGPT and renal tests like uric acid, creatinine, and urea were decreased after the treatment. The liver function tests like SGOT, SGPT decreased significantly (p-value 0.0004) and the renal function tests such as uric acid, creatinine and urea decreased with extremely significant p-value (< 0.0001). Hemoglobin and platelet count were found to be slightly increased (Table 4). Ismail *et al.*[13], concluded in their study that Nifedipine decreased blood pressure and improved kidney functions without affecting the umbilical artery blood flow in cases of preeclampsia.

Table 4. Laboratory Investigation Results (Before and After Treatment)

Laboratory values	Before treatment	After treatment	p-value
Albminuria (mg/24hr urine sample)	1295±825.05	560±602.36	< 0.0001
Hemoglobin (gm%)	10.82±1.023	11.23±0.78	0.0236
SGOT (U/L)	29.92±6.07	25.63±5.92	0.0004
SGPT (U/L)	29.35±7.11	24.58±6.09	0.0004
Uric acid (mg/dl)	5.05±1.03	3.703±0.86	< 0.0001
Creatinine (mg/dl)	0.986±0.244	0.79±0.18	< 0.0001
Platelet count (lakh/cu.mm)	2.63±0.361	2.83±0.44	0.0128
Urea (mg/dl)	22.19±3.67	19.63±2.63	< 0.0001

The aim of antihypertensive therapy is to prevent complications due to hypertension while prolonging the course of pregnancy. Major maternal complications seen in the treatment group include eclampsia (3.85 %) and placental abruption (1.92 %). In none of the study population the condition leads to death (Table 5).

Table 5. Maternal Complications

Maternal Complications	Number of patients (n= 52)	Percentage (%)
Eclampsia	2	3.85
Death	0	0
Placental abruption	1	1.92

Table 6. Neonatal Outcome

Neonatal Outcome	Number of patients (n= 52)	Percentage (%)
Fetal distress	4	7.6
IUGR	3	5.7
Death	1	1.92
LBW	3	5.7

By examining the neonatal outcome, it is observed that 7.6 % neonates developed fetal distress, intrauterine growth retardation (IUGR) (5.7 %), low birth weight (LBW) babies (5.7 %) and 1.92 % neonatal death occurred (Table 6). Only lesser percentage of fetal or

neonatal adverse effects was occurred in the study population receiving antihypertensives. The utilization of antihypertensives prevents the progress of mild preeclampsia to severe preeclampsia. This study agrees with Aslam *et al*.,[14] who reported good fetomaternal outcome after the antihypertensive therapy.

CONCLUSION

Preeclampsia continues to present as one of leading causes of maternal morbidity and mortality. Our study reveals that antihypertensives are much effective in controlling systolic and diastolic blood pressure in pre-eclamptic patients. Among the antihypertensives used, methyldopa with nifedipine combination cause marked decrease in the systolic and diastolic blood pressure with reduced maternal and neonatal complications. It is concluded that there is insufficient data to favor one antihypertensive agent over another, but drugs of reduced maternal and fetal adverse effects are preferred. This study suggests that future studies should comprise detailed outcomes of risk and benefit for both the mother and baby. Better surveillance systems to routinely monitor adverse events and numbers of women exposed to particular agents are required to guide treatment efficacy, advance our knowledge of drug safety, and ultimately improve treatment options.

ACKNOWLEDGEMENT

The authors gratefully acknowledge to the administration of Government headquarters hospital and Srimathi hospital, for giving permission to conduct the study and special thanks to the staff of the two hospitals where data were collected.

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