Research Article

Prescribing Patterns of Severe Preeclampsia in Critical Care Unit

Manjusha Sajith[1], Vandana Nimbargi[2], Kapil Adwani[3], Manjima Fairy[3] and Atmaram Pawar[3]

[1]Department of Clinical Pharmacy, Bharati Vidyapeeth Deemed University, Poona College of Pharmacy, Pune, Maharashtra, India.
[2]Department Of Obstetrics and Gynaecology, Bharati Hospital and Research centre, Pune, Maharashtra, India.
[3]Pharm.D Program, Bharati Vidyapeeth University, Poona College of Pharmacy, Erandwane, Pune, Maharashttra, India.

ABSTRACT

Aim: To evaluate management trends of severe preeclampsia in Critical care unit. **Method and Materials:** A retrospective observational study was conducted over a period of five years from January 2010 to February 2015 in obstetrics Critical Care Unit of Bharati hospital and Research centre, Pune. Severe preeclampsia patient's data like age, gestational age, presenting complaints, obstetric history and drug prescription pattern were collected in severe preeclampsia patient profile form. **Result:** The incidence of severe preeclampsia in critical care was 0.34%. Highest incidence of severe preeclampsia was observed in age group of 18-22 years (50.0%) with gestational age of 31-35 weeks (37.5%) and in primigravida patients (57.5%). A majority of patients were on combination therapy of antihypertensive drugs (75.8 %) and the most commonly prescribed antihypertensive was Labetalol (57.6 %). Anticonvulsants were given for prevention and management of Eclampsia as monotherapy (85.7%) and combinational therapy (14.3%) and the most common anticonvulsant drug used was given $MgSO_4$.

Conclusion: Severe preeclampsia & its complications were treated with antihypertensives, anticonvulsants, blood Products, Vitamin K and Mannitol. Most common antihypertensive drugs used were intravenous (IV) labetalol & oral nifedipine. Labetalol was the most commonly prescribed antihypertensives in Monotherapy and combination therapy. Commonly used anticonvulsant was Magnesium sulphate.

Keywords: Severe preeclampsia, Antihypertensives, Anticonvulsants.

INTRODUCTION

The hypertensive disorders of pregnancy cover a spectrum of conditions, of which preeclampsia poses the greatest risk and remains one of the common cause of maternal deaths. Preeclampsia is considered as severe if the blood pressure is ≥160mm Hg systolic and ≥110 mmHg diastolic or proteinuria or oliguria, with the warning symptoms like persistent headache, visual disturbances, sudden swelling of face, hands or feet, vomiting, epigastric pain etc.[1]

Delivery remains the ultimate treatment for preeclampsia[2]. Although maternal and fetal risks must be weighed in determining the timing of delivery, clear indications for delivery exist[3,4]. The focus of pharmacologic treatment in management of the maternal signs and symptoms so gestation may be prolonged and fetal outcomes improved. Treatment often requires balancing maternal safety and fetal safety. An increased gestation leads to decreased morbidity and mortality for the fetus, but this should be weighed against maternal condition, as preeclampsia may quickly progress to eclampsia, HELLP syndrome, or other morbidities.[5] Induction of labor is required when maternal disease progresses to eclampsia, HELLP syndrome, DIC, pulmonary edema, or significant renal dysfunction.

During labor, the management goals are to prevent seizures and control hypertension.[3] commonly used antihypertensive pharmacologic agents include labetalol, hydralazine, methyldopa, nicardipine, or nifedipine. Magnesium sulfate is the medication of choice for the prevention of eclamptic seizures in women with severe preeclampsia and for the treatment of women with eclamptic seizures.

Despite advances in medical practice preeclampsia and eclampsia still remains a

leading cause of maternal and perinatal morbidity and mortality throughout the world. Preventing preeclampsia would therefore be a highly desirable goal. The purpose of this study is to review all severe preeclampsia patients admitted to the intensive care unit & high dependency unit over a 5 years period to determine their management.

MATERIALS AND METHODS

A retrospective study was conducted over a period of five years from January 2010 to February 2015 at Obstetrics and gynecology Department of Bharati hospital and Research centre Pune. The inclusion criteria for study subjects were Hypertensive patients with BP ≥ 160 (Systolic) and ≥110 (Diastolic) and singleton and multiple pregnancies and patients with medical disorders. Patients with congenital abnormalities of the fetus were excluded. Data were collected in severe preeclampsia Proforma. Details like name, age, obstetrical history, presenting complaints, past obstetric history, family history, medication history, laboratory reports, blood pressure on antenatal check-up, Drugs prescribed were collected in the severe preeclampsia patient profile form.

RESULT

Table 1.0 indicates total distribution of patients with respect to age group showed that highest numbers of patients were observed in age group of 18-22 years (50.0%) and the lowest were above 32 years age group (10.0%). Patients around 37.5% were observed with gestational age of 31-35 weeks while around 2.5% patients were observed with 21-24 weeks of gestational age. Out of 40 patients 23 were primigravida (57.5%) and 17 were multigravida (42.5%).

Figure 1 represents use of drugs in severe preeclampsia patients. Out of 40 patients 33 were prescribed with antihypertensive (82.5%), 35 (87.5%) patients were prescribed with anticonvulsants, 15 (37.5%) patients were with steroids, 2 (5%) with vitamin K and 35 (87.5 %) patients were prescribed with antibiotics.

Table 2 represents the details of patients treated with single antihypertensive drug and Combination therapy. Out of 40 patients, 33 patients were prescribed with antihypertensive drugs. In which 8 patients were with single antihypertensive therapy among them 4 patients with Methyldopa, 2 with Labetalol and 1 each with Amlodipine and Nifedipine whereas remaining 25 were prescribed with Combination therapy in which 7 patients with two drug combinations, 10 patients with three drugs combinations and 8 patients with four drug combinations.

Table 3 represents the route of administration of antihypertensive drugs. Maximum patients were given with oral and parenteral combination 13 (39.4 %) therapy.

Table 4 represents prescription pattern of anticonvulsants. Out of 35 patients administered anticonvulsants, 30 were treated with single anticonvulsant drug therapy. In Monotherapy maximum patients 26 (74.3%) with $MgSO_4$ rest were given Phenobarbitone and Sodium Valproate. Whereas remaining 5 patients were treated with combination therapy.

DISCUSSION

The incidence of severe preeclampsia related obstetric ICU admission was 0.34 %. In our study highest incidence of the severe preeclampsia occurred among those aged 18 to 22 years. This could be because the majority of conceptions take place in this age group in our country. Preeclampsia is more frequent in patients younger than 21 years of age and in older than 35.[6]In our study majority of preeclampsia patients were between the ages of 18 to 22 years. Preeclampsia and eclampsia were apparently higher in younger pregnant women (less than 30 years) as *Yucesoy et al*, showed in their recent investigation.

The incidence of Preeclampsia is distributed unevenly throughout late gestation, increasing with advancing gestation. Early-onset PIH is often associated with severe preeclampsia. 37.5 % of the severe preeclamptic women were at 31-35 weeks of gestation period, 11 (27.5%) were at >36and15 (37.5 %) were at 25-30 gestational weeks. Preeclampsia is primarily regarded as a disease of first pregnancy. In our study 57.5% were primi gravidas and 42.5% were multi gravidas.

The main goal of therapy for severe preeclampsia is to control BP and to prevent convulsion (eclampsia). Delivery of the fetus is usually the definitive management of severe preeclampsia in pregnancy. However, this action may not reduce the blood pressure immediately. After initial treatment with rapid-acting agents, it is often advantageous to maintain control of arterial pressure with ongoing antihypertensive therapy. In the present study monotherapy with Nifedipine (3.3 %) & Methyldopa (3.3%) was prescribed in 6.6 % patients. 36.7 % patients were treated with two drugs combinations, 26.7 % patients were prescribed with three drug

combinations, 23.4 % patients were prescribed with four drug combinations & 16.6 % patients with more than four drugs combinations. In our study Labetalol is most commonly prescribed drugs in combinations therapy. As per standard guidelines treatment for controlling Blood Pressure is Labetalol (intravenous)/ Hydralazine (Intravenous)/ Nifedipine (Oral). Our study complies with standard guidelines. Labetalol is commonly used along with other antihypertensives as combination. However, intravenous hydralazine is regarded as the first drug of choice for this purpose by several groups. Meta-analysis conducted by *Magee and colleagues*[7] on hydralazine with nifedipine and hydralazine with labetalol showed that hydralazine was associated with significantly higher maternal side-effects and worse maternal and perinatal outcomes than either labetalol or nifedipine.[7] It also demonstrated that hydralazine was more poorly tolerated. Therefore, oral labetalol has been our most common first line agent and most women do not need intravenous therapy or additional drugs. When an additional drug is required, nifedipine is the drug of choice.

The combination antihypertensive pharmacotherapy is due to optimal BP control cannot be achieved on monotherapy because of severity of illness. Safety and efficacy of drugs used in the hospital are well established. Literature indicates that medications commonly used to treat hypertension associated with severe pre-eclampsia include hydralazine, labetalol, and nifedipine (or other calcium channel blockers) with a goal diastolic BP of 90–105 mmHg and systolic BP of 140–155 mmHg or a mean arterial pressure of 105–125 mmHg.

Anticonvulsant therapy is indicated both to prevent the occurrence and control of convulsions in preeclampsia and eclampsia. Magnesium sulphate has now become the drug of choice for treating and preventing convulsions in women with preeclampsia/eclampsia.[8] Magnesium sulphate was found to be the most common anticonvulsant being prescribed closely followed by Phenobarbitone. When seizures persist despite repeat dose of magnesium sulphate the next line of action is diazepam in a slow intravenous dose of 10 mg and status eclampticus warrants treatment with sodium thiopentone. In present study 30 patients (85.7%) received monotherapy and Magnesium sulphate was commonly used (74.3%) anticonvulsive agent in antepartum period. Whereas 5 patients (14.3%) received combinational therapy in which Magnesium sulphate was given along with Leviteracetam, Phenobarbitone, Phenytoin and Fosphenytoin during antepartum period.

Table 1: Demographic details of severe preeclampsia patients in Critical Care Unit

	Number of patients	Percentage (%)
Age (years)		
18-22	20	50 .0
23-27	10	25 .0
28-32	06	15 .0
>32	04	10 .0
Gestational Age (weeks)		
21-24	01	2.5
25-30	11	27.5
31-35	15	37.5
>36	11	27.5
Post partum	02	5 .0
Gravida		
Multigravida	17	42.5
Primigravida	23	57.5

Table 2: Prescription pattern of Antihypertensive drugs

Antihypertensive drug	Number of patients	Percentage (%)
Monotherapy	**8**	24.2
Amlodipine	1	3.0
Nifedipine	1	3.0
Labetalol	2	6.0
Methyldopa	4	12.1
Combination therapy	**25**	75.8
Two drugs	**07**	21.5
Labetalol + Amlodipine	1	3.0
Labetalol + Methyldopa	1	3.0
Labetalol + Furosemide	1	3.0
Labetalol +Nifedipine	1	3.0
Methyldopa + Nifedipine	1	3.0
Methyldopa + Nicardipine	1	3.0
Nifedipine + Furosemide	1	3.0
Three drugs	**10**	30.0
Labetalol + Amlodipine + Furosemide	1	3.0
Labetalol+ Nifedipine + Furosemide	4	12.0
Labetalol + Methyldopa + Nifedipine	2	6.0
Methyldopa + Nifedipine+ +Furosemide	1	3.0
Methyldopa + Nifedipine + Clindipine	1	3.0
Methyldopa + Amlodipine + Labetalol	1	3.0
Four drugs	**08**	24.3
Methyldopa + Labetalol + Nifedipine + Furosemide	2	6.0

Methyldopa + Nifedipine + Furosemide + Amlodipine	1	3.0
Methyldopa + Nicardipine + Nifedipine + Furosemide	1	3.0
Methyldopa + Nifedipine+ Nicardipine + Labetalol	1	3.0
Methyldopa + Labetalol + Nifedipine + Atenolol	1	3.0
Methyldopa + Labetalol + Nicardipine+ Furosemide	1	3.0
Furosemide + Spironolatone + Methyldopa + Nifedipine + Labetalol	1	3.0

Table 3: Routes of administration of Antihypertensive drugs

Route of administration	Number of patients (%)
Oral	4 (12.1)
Parenteral	4(12.1)
Oral + Parenteral	13(39.4)
Oral combinations	11(33.3)
Parenteral combinations	1(3.0)

Table 4: Prescription pattern of anticonvulsants

Anticonvulsant drugs	Number of patients	Percentage (%)
Monotherapy	**30**	**85.7**
$MgSO_4$	26	74.3
Phenobarbitone	3	8.5
Sodium Valproate	1	2.9
Combination therapy	**5**	**14.3**
$MgSO_4$ + Phenobarbitone	2	5.6
$MgSO_4$ + Phenytoin	1	2.9
$MgSO_4$ **+** Leviteracetam	1	2.9
$MgSO_4$ + Fosphenytoin	1	2.9

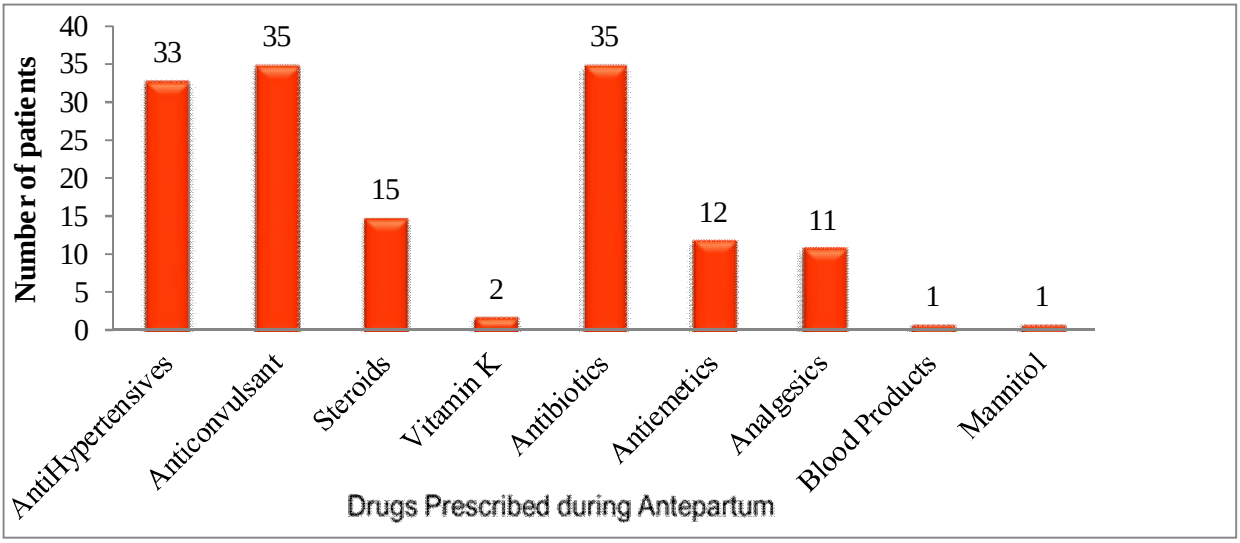

Fig. 1: Use of drugs in severe preeclampsia patients

CONCLUSION

Severe preeclampsia & its complications were treated with antihypertensives, anticonvulsants, blood Products, Vitamin K and Mannitol. Most common antihypertensive drugs used were intravenous (IV) labetalol & oral Nifedipine. Labetalol was the most commonly prescribed antihypertensives in Monotherapy and combination therapy. Commonly used anticonvulsant was Magnesium sulphate.

ACKNOWLEDGEMENTS

We thank Department of Obstetrics and Gynecology, Bharati hospital and research centre, Pune for their kind corporation and support in conduct of study.

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