Research Article

Prescription pattern of drugs in pregnancy induced hypertension in a tertiary care hospital

Naveen Kumar T[1]*, Tadvi NA[2], Kaul R[3]

[1]Department of Pharmacology, Apollo Institute of Medical Sciences and Research, Jubilee Hills, Hyderabad, A.P., India
[2]Department of Pharmacology,
[3]Department of Obstetrics and Gynaecology, Kamineni Institute of Medical Sciences, Narketpally, A.P., India

*Correspondence to:
Dr. Naveen Kumar T,
Email:
doctornaveen1@rediffmail.com

ABSTRACT

Background: The objective of this study was to evaluate the prescription pattern of drugs in pregnancy induced hypertension in a tertiary care hospital.
Methods: A retrospective observational study was conducted by department of Pharmacology in collaboration with the Department of Obstetrics in Kamineni Institute of Medical Sciences, Narketpally after taking permission from the Institutional Review Board. WHO basic indicators were indicators were used for studying the prescribing pattern of drugs.
Results: Out of the total prescriptions studied the most commonly prescribed antihypertensive was Methyldopa, followed by Nifedipine. Amlodipine, Atenolol and Magnesium sulphate were the other drugs prescribed. Majority drugs prescribed were from category B and C. Single drug therapy was prescribed in 46.94% patients. The use of fixed dose combinations was low.
Conclusion: The incidence of single drugs therapy and two drugs was high. Irrational prescriptions were few. The present pattern of prescriptions can be improved by advocating rational drug prescription and awareness regarding safe use of drugs to the obstetricians.

Keywords: Antihypertensives, Drug use indicators, Pregnancy induced hypertension, Drug utilization studies

INTRODUCTION

Hypertensive disorders are one of the most common disorders in pregnancy. They are amongst the major cause of maternal and perinatal morbidity and mortality.[1] Hypertension in pregnancy is defined as systolic blood pressure (sBP) ≥ 140 mmHg and/or diastolic blood pressure (dBP) ≥ 90 mmHg, or by ↑ in sBP ≥ 30 mmHg, or in dBP ≥15 mmHg from preconception or first trimester blood pressure confirmed by two measuring 6 hours apart.[2]

Several risk factors have been found to be associated with an increased risk of developing preeclampsia: the presence of type 1 diabetes, gestational diabetes, twin birth and obesity (body mass index >29).[3] The likelihood of progression from gestational hypertension to pre-eclampsia may be increased by a prior miscarriage.[3,4] A study on a large cohort of Latin American and Caribbean women identified the following risk factors for developing pre-eclampsia: nulliparity, multiple pregnancy, history of chronic hypertension, gestational diabetes, maternal age over 35 years, fetal malformation and obesity.[5] A number of drugs in various combinations are generally used for effective long –term management of hypertension. Therefore ,drug utilization studies, which evaluate, analyze the medical, social and economic outcomes of the drug therapy, are more meaningful and

observe the prescribing attitude of physicians with the aim to provide drugs rationally.[6] The World Health Organization (WHO) in 1997 defined drug utilization as the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences.[7] The study of prescribing pattern is a component of medical audit, which seeks monitoring in the prescribing practices of the prescribers to achieve rational and cost effective medical care.[8] Accordingly there is need to survey the pattern of usage of antihypertensives drugs, to see if the current usage is rational, effective and tolerated and in concordance with current guidelines for treatment of hypertension.[9]

The present study was designed to analyze the physicians prescribing pattern of various antihypertensives, a drug utilization study of both qualitative and quantitative variants, also describing physicians compliance with existing guidelines.

Hypertension in pregnancy is of following major types[2]

1. *Chronic hypertension:* Blood pressure (BP) $\geq$ 140/90 mmHg is diagnosed before pregnancy in first 20 weeks of gestation or persists 42 days after delivery.
2. *Gestational hypertension:* Blood pressure $\geq$ 140/90 mmHg established after 20 weeks of gestation and not associated with proteinuria.
3. *Preeclampsia-eclampsia:* Hypertension, proteinuria ($\geq$ 0.3 g/24 hours) and edema after 20th week of gestation. Eclampsia is defined as appearance of generalized convulsions associated with signs of pre-eclampsia, or their occurrence within 7 days of parturition and not caused by epilepsy or other convulsive disorder.

The greatest challenge in treating hypertension in pregnancy is to reduce the blood pressure to assure the safety of mother and at same time not to compromise uteroplacental perfusion or cause harmful effects on the foetus.[10] The ideal therapy of hypertension in pregnancy should be potent, rapidly acting and without any adverse maternal or foetal effect.

The aim of the present study was to investigate the drug utilization pattern of antihypertensive drugs in pregnancy induced hypertension.

METHODS

A retrospective observational study was conducted by Department of Pharmacology in collaboration with the Department of Obstetrics in Kamineni Institute of Medical Sciences, Narketpally after taking permission from the Institutional Review Board. The Case record sheets of the patients diagnosed for pregnancy induced hypertension or gestational hypertension admitted to the obstetrics ward for the past 6 months were reviewed. The

information regarding total number of drugs prescribed, with dosage, frequency, duration were recorded and from this the core indicators like prescribing indicators and complementary indicators were evaluated.

Prescribing indicators [11]

a) Average number of drugs per patient was calculated by dividing the total number of different drug products prescribed by the number of patients surveyed.

b) Percentage of drugs prescribed by generic name was determined by dividing the number of drugs prescribed by generic name by the total number of drugs prescribed, multiplied by 100.

c) Percentage of drugs prescribed from essential drug list was determined by dividing the number of products prescribed from essential drug list of the hospital by the total number of drugs prescribed, multiplied by 100.

Complementary Indicators

Effect of the drug on the foetus (Low birth Weight, IUGR, death or defect, were also recorded)

The prescribed drugs also reviewed for their category and safety.

Definition of risk factors [12]

Category A

Controlled studies in women fail to demonstrate a risk to the foetus in any trimester and the possibility of foetal harm remains remote.

Category B

Either animal-reproduction studies have not demonstrated a foetal risk but there are no controlled studies in pregnant women or animal-reproduction studies have shown an adverse effect (other than a decrease in fertility) that was not confirmed in controlled studies in women in the 1st trimester(and there is no evidence of a risk in later trimesters).

Category C

Either studies in animals have revealed adverse effects on the foetus (teratogenic or embryocidal or other) and there are no controlled studies in women and animals are not available. Drugs should be given only if the potential benefits justify the potential risk to the foetus.

Category D

There is positive evidence of human foetal risk, but the benefits from use in pregnant women may be acceptable

despite the risk (e.g. if the drug is needed in a life-threatening situation or for a serious disease for which safer drugs cannot be used or are ineffective)

Category X

Studies in animals or human beings have demonstrated foetal abnormalities or there is evidence of foetal risk based on human experience or both, and the risk of the use drug in pregnant women clearly outweighs any possible benefits. The drug is contraindicated in women who are, or may become pregnant.

RESULTS

Among prescriptions collected 12% were with eclampsia, 4% were with placental abruption, 2% were with oligohydramnios and polyhydramnios and 4% with anemia.

Table 1: Demographic distribution of the patients.

Age groups	Number of patients	Percentage
18-20	13	26.51
21-25	26	53.07
26-30	02	4.09
31-35	08	16.33

Table 2: Gravidity wise distribution of patients.

Gravida	Number of patients	Percentage
Primi	28	57.14
Second	14	28.57
Third	05	10.21
Fourth	02	4.08

Table 3: Blood pressure range of patients before administration of drugs.

BP range	BP (mmHg) s/d*	Number of patients	Percentage
Mild	140-159/ 90-99	16	32.65
Moderate	160-179/ 100-109	17	34.70
Severe	>180/110	16	32.65

*s/d: systolic/ diastolic blood pressure

Table 4: Maternal complications.

Maternal complications	Number of patients	Percentage
Eclampsia	06	12.24
Placental abruption	02	4.08
Oligohydramnios	01	2.04
Polyhydramnios	01	2.04
Anemia	02	4.08

Table 5: Neonatal outcomes.

Neonatal outcome	Number of patients	Percentage
Low birth weight	11	22.45
Foetal distress	02	4.08
IUGR	02	4.08
Death	01	2.04

Table 6: Prescribing pattern of drugs in hospital.

Drug therapy	Number of patients	Percentage
Single drugs	23	46.94
Two drugs	18	36.74
Three drugs	7	14.87
More than 3 drugs	1	2.05
Fixed dose combination	6	12.24

Table 7: Name of antihypertensives used and their frequency.

Name of drug used	Frequency	Category of drug
Methyl dopa	34	B
Nifedipine	32	C
Amlodipine	7	C
Atenolol	6	D
Magnesium sulfate	6	A
Telmisartan	1	D
Hydrochlorothiazide	1	B

Table 8: Details of drug use indicators.

Indicators	Data
Core indicators	
Average drugs prescribed per prescription	4.4
Average number of antihypertensives per prescription	1.76
Prescriptions by generic name	13%
On essential list	82%
Facility indicators	
Availability of EDL	Yes
Key drugs available	Yes (100%)

DISCUSSION

Rational drug use in pregnancy requires balancing of benefits and the potential risks associated with the use of drugs.[13] One of the most common ailments in pregnancy which requires drug therapy is Pregnancy Induced Hypertension (PIH). The most commonly prescribed antihypertensives were methyldopa and nifedipine. Methyldopa is the safest antihypertensive in pregnancy followed by Nifedipine. Calcium channel blockers should not be given as first line drugs because they can inhibit the contractions of uterus. Single drug therapy was prescribed in 46.94% patients only so we can comment that multidrug therapy is more commonly used PIH.

The majority of drugs used in this study were from Category B and C but the use of category D drug like atenolol and telmisartan was observed in 6 and 1 patient respectively. Though they were rarely used in third trimester and did not affect the outcome of the foetus they should not be used in pregnancy as more safe drugs are available. The incidence of PIH was highest among primigravida (57.14%) in our study this co-relates with study by Tanuja et al (2010).[14] The most common maternal complication seen was eclampsia seen in 12.24% of patients. The most common neonatal outcome was low birth weight baby. The co-relation of the effect of PIH on foetal weight should be evaluated further by planning more studies. The incidence of IUGR, premature babies and foetal distress were also noticed albeit it cannot be co-related to PIH or drugs used in this study.

The use of fixed drug combinations was low this may be because of difficulty in titrating the dose with fixed dose.

CONCLUSION

Hypertension in pregnancy is one of the most common disorders encountered in pregnancy. Though many drugs are available it is still safe to use methyldopa followed by calcium channel blockers. The use of multidrug therapy should be more rationale. The incidence of Low birth weight babies was high which may be due to either effect of maternal hypertension or drugs which should be evaluated by further studies. The limitation of the present study is its low sample size, and the data is insufficient to favour any particular antihypertensive. The cost benefit analysis was not performed as this is a retrospective study. More such studies should be done to evaluate the prescription pattern and education and awareness regarding the safe use of drugs should be provided to the obstetricians.

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