CODEN (USA): IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

Available online at: http://www.iajps.com **Case Study**

DRUG-DRUG INTERACTIONS IN PATIENTS DISTRESS FROM HYPERTENSION IN TERTIARY CARE HOSPITAL

Sowmya Boreda[1] , Sagarika Addetla[1], Asha Sara Stephen[2]

[1,1,]Department of Pharmacy Practice, Malla Reddy Hospital, Hyderabad, Telangana, India-500055

[2] Faculty of Pharmacy, Malla Reddy College of Pharmacy, Hyderabad-500014, India.

Abstract:

Drug-Drug Interactions (DDIs) is an important issue and now it is also realized that many of them can be explained by change in the enzymes, which involve in metabolism that are present in and out of liver. Co-administration of some drugs act as enzyme inducers, whereas some are inhibitors of enzyme which results undesirable effects. Hypertension (HTN) is a most common cardiovascular disease which can be defined as "consistently elevated blood pressure (arterial) or average systolic blood pressure ≥140 mm Hg, or diastolic blood pressure ≥ 90 mm Hg". It is a disease which has a high global burden which is a worldwide public health challenge as well as a leading risk factor of mortality. The study was a prospective observational study and conducted at a tertiary care hospital at Suraram, Telangana, India. The study were carried over two months. Designing a Proforma for data collection. Analyzing the prescription and categorizing it into varieties based on antibiotics prescribed, route of administration and combinations. 100 HTN patient's prescription's were collected from different departments of Malla Reddy Hospital. Of which 45 prescription's showed DDIs and 55 prescription don't have DDIs. Out of 45 DDI's prescriptions 15 were male patients and 30 female patients. Prescription then evaluated using Standard Drug Interaction Software i.e. Lexi-comp's Lexi-Interact to check the Degree of DDIs.

Key Words: *Drug Drug Interactions, Hypertension, Hypertensive Drugs.*

Corresponding author:

Boreda Sowmya,

H.no: 1-8-718/1/3A, B.K.ENCLAVE,
Nallakunta Vegetable Market,
Hyderabad, Telangana-500044.

QR code

Please cite this article in press as Sowmya Boreda et al, ***Drug-Drug Interactions in Patients Distress From Hypertension in Tertiary Care Hospital****, Indo Am. J. P. Sci, 2016; 3(9).*

INTRODUCTION:

Drug-Drug interactions (DDI) are modification of the effect of one drug (object drug) by concomitant administration of another (precipitant) drug. Concomitant use of several drugs in presence of another drug is often necessary for achieving a set of goal or in the case when the patient is suffering from more than one disease but chances of DDIs would increase. Drug interactions are of two types Pharmacokinetic and Pharmacodynamic, Pharmacokinetic DDI effect drug's kinetic i.e. absorption, distribution, metabolism and excretion. Pharmacokinetic Mechanism of Drug interactions include Alteration in GI absorption, Alteration of pH, Alteration in Distribution, Stimulation of Metabolism, Inhibition of Metabolism, Alteration in Excretion. Pharmacodynamically drug interactions alter the pharmacological activity of the interacting drugs by synergism and antagonism.

Risk factors for DDIs

Poly pharmacy, Multiple prescribers, Genetic makeup Specific population like females, elderly, obese, malnourished, critically ill patient, transplant recipient. Specific illness like Hepatic disease and renal dysfunction. Narrow therapeutic index drugs like Cyclosporine, Digoxin, Insulin, Lithium, Antidepressant and Warfarin. Hypertension (HTN) or high blood pressure, or arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is elevated [1].

Risk factors for HTN

Age, Race, Family history, Excess weight (>25 Body Mass Index) Inactivity, Tobacco use, Excess Sodium intake, Low potassium, calcium, magnesium intake, Alcohol (moderate) intake Stress. Effects of HTN includes, damage of blood vessels in kidney, brain, & heart which leads to an increase incidence of renal & cardiac failure, coronary & cerebral ischemia. Drug prescription (℞) is a health-care program that governs the plan of care for an individual patient and is implemented by a qualified practitioner [2]. Patients suffering from HTN requires multi-drug (Poly-pharmacy) long term management plan/ treatment regimen in order to prevent the complications & associated problems (cardio & cerebro-vascular disorders) to maintain a healthy life. Moreover HTN patients may also be affected with other metabolic diseases like Diabetes & Dislipidemia, therefore devising a treatment regimen that avoids all possible drug-drug

interaction (DDIs) within the therapeutic plan is of utmost importance. It is of necessity to know the interactions between drugs in treatment regimen of patients suffering from HTN, thus Interactions within the medications. DDIs are a concern for patients and providers, as multiple

medication use is becoming more common to manage complex diseases. Polypharmacy is the most important risk factor for DDIs [3,4].Drug-drug interaction is among the major drug related problems. A drug interaction is said to occur when the effect of one drug is changed by the presence of another drug, food, or by some environmental chemical agent [5].

MATERIALS AND METHODS:

The study was a prospective observational study and conducted at a tertiary care hospital at Suraram, Telangana, India. The study were carried over two months. Designing a Proforma for data collection. Analyzing the prescription and categorizing it into varieties based on antibiotics prescribed, route of administration and combinations.

STUDY SITE: The study was conducted in the various departments at Malla Reddy Hospital which is a 300 bedded teaching hospital located at Suraram, Telangana, India.

STUDY DESIGN: A prospective observational study was conducted by using prescription and semi-structured questionnaire.

RESULTS:

100 HTN patient's prescription collected from different departments of hospital of Malla Reddy hospital. Out of 100 prescription, 45 prescription shows DDIs in which, male patients were 15 and 30 female patients.

Table 1: Gender Wise Distribution

MALES	15
FEMALES	30
TOTAL	45

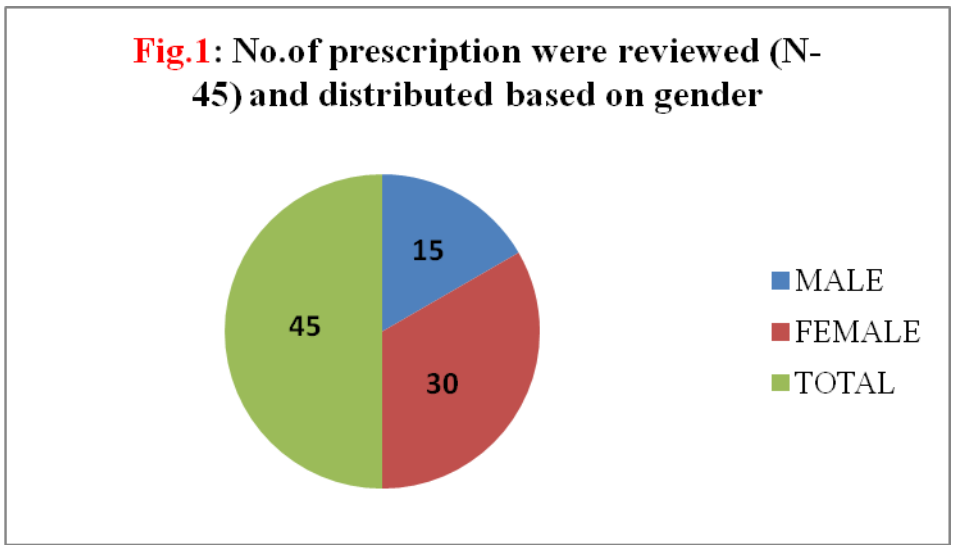

Table 2: Age wise distribution of patients:

Age(yrs)	Male patients	Female patients
20-30	18	15
31- 40	9	37
41- 60	12	9

Illustrates distribution of patients according to age , It was observed that 46 patients were between 31-40yrs, 33 patients were between 20-30yrs , 21 patients were between 41-60yrs.

Table.3: show the hypertension ratio

Blood pressure	Systole (mm Hg)	Diastole (mm Hg)
NORMAL	100 - 140	60 -90
HIGH	≥ 140	≥ 90
IDEAL	115	75

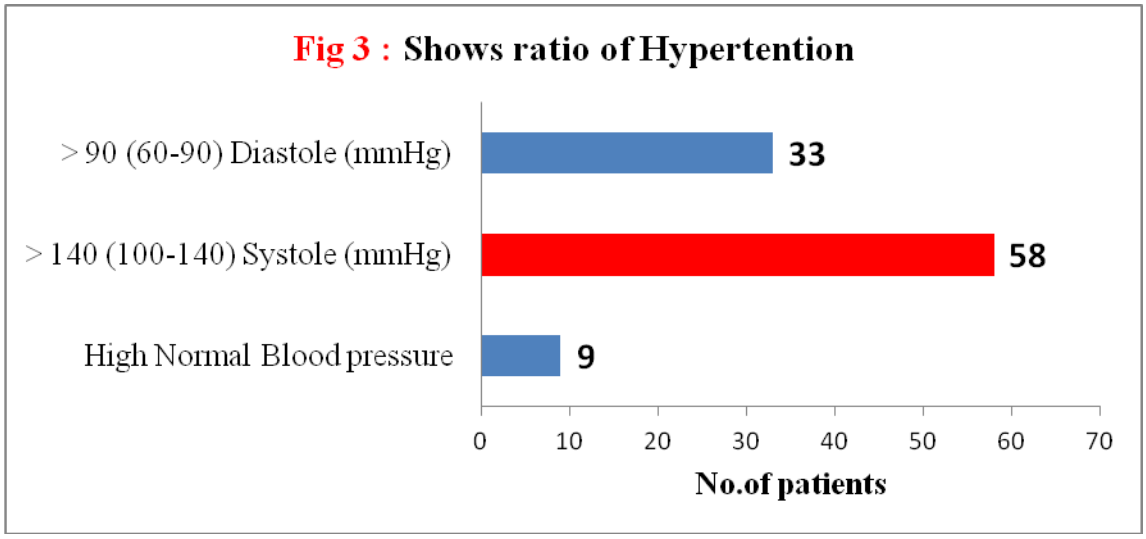

Table 4: Possible Co-Morbid conditions

COMORBIDITIES	NUMBER OF PATIENTS
Cardiovascular Disease(CVD)	19
Stroke and Heart attack	39
Risk of CVD	42

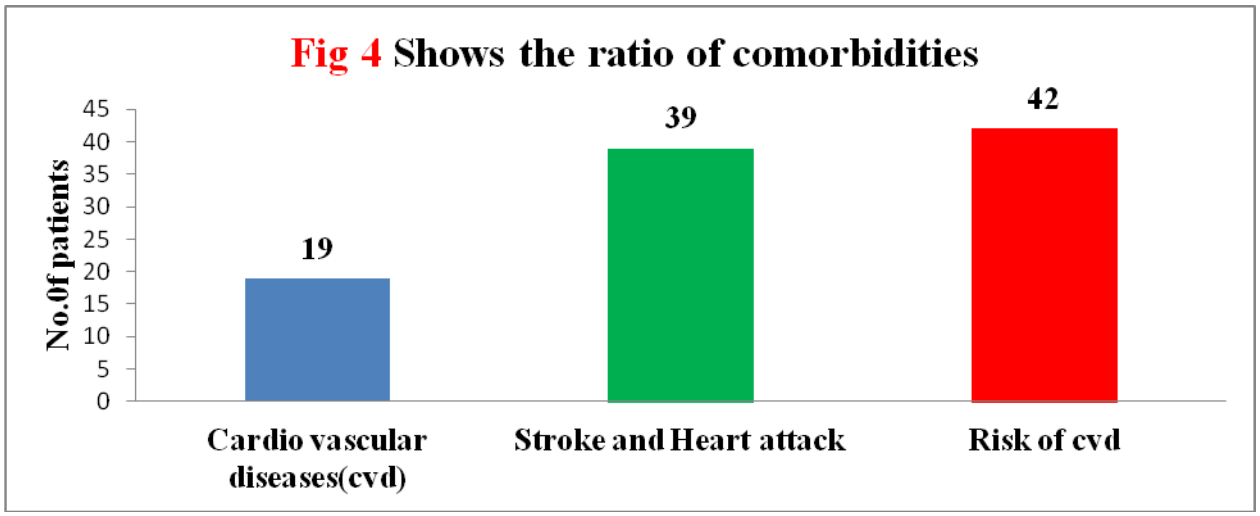

Table 5: Show HTN patient's prescription collected from HOSPITAL

PRESCRIPTIONS	Prescription with DDIs	Prescription without DDIs
Male patients	15	21
Female patients	30	33

Prescriptions collected from hospital were 100 prescriptions collected, 45 of prescription show DDIs and 55 prescriptions did not contain DDIs. Prescription then evaluated using Standard Drug Interaction Software i.e. Lexi-comp's Lexi-Interact to check the Degree of DDIs.Table-3 shows the ratio of hypertension, Table-4 shows Possible Co-morbid conditions,Table-5 shows HTNS patients prescription collected from hospital.

Table 6: Drug interactions of antihypertensive drugs, classified according to drug class.

Drug class	Drug interactions
Beta blockers	Bradycardia. Hepatic interactions for metoprolol, carvedilol (CYP2D6), labetalol, and propranolol. Bisoprolol and nebivolol eliminated by both liver and kidney, Hence a lesser risk of hepatic interactions. No hepatic interactions for atenolol, nadolol, and sotalol.
Calcium-channel blockers	Bradycardia and heart block, with heart rate-reducing agents (verapamil and diltiazem). Amlodipine and nifedipine, hepatic interaction with simvastatin and atorvastatin.
Diuretics	Hypokalaemia opposed by concurrent ACE inhibitors/ARBs.
ACE inhibitors, ARBs and renin inhibitors	Hyperkalaemia opposed by concurrent diuretics.
Aldosterone blockers	During co-therapy with spironolactone or eplerenone for hypertensive heart failure, danger of hyperkalaemia.
Alpha blockers	Risk of fluid retention with heart failure opposed by concurrent diuretics.

CONCLUSION:

Drug-Drug interactions are mostly caused due to Polypharmacy and Improper time gap between two drugs. From the above data, we conclude that Drug-Drug interactions were mainly reported in Females compared to Men, mostly in age gap between 31-40 years. The Systolic blood pressure was more predominant than Diastolic blood pressure. By excess drug use, the risk of developing co-morbid conditions are high, amongst them the risk for Cardiovascular disease were majorly noted.

REFERENCES:

1.Chobanian AV, Bakris GL, Black HR et al. (December 2003)."Seventh report of the Joint National Committee on Prevention, Detection,Evaluation, and Treatment of High Blood Pressure".Hypertension42(6): 1206 –52.

2. Belknap SM, Moore H, Lanzotti SA, Yarnold PR, Getz M, Deitrick DL, Peterson A, Akeson J, Maurer T, Soltysik RC, Storm GA, Brooks I (September 2008). "Application of software design principles and debugging methods to an analgesia prescription reduces risk of severe injury from medical use of opioids".Clinical Pharmacology & Therapeutics 84(3): 385–92.

3. Dallenbach FM, Bovier PA, Desmeules J. Detecting druginteractions using personal digital assistants in an out-patient clinic. Q J Med 2007; 100:691-7.

4. Grattagliano I, Portincasa P, D'Ambrosio G, Palmieri VO, Palasciano G. Avoiding drug interactions: Here's help. J Fam Pract 2010; 59, 322-329.

5. Ivan H Stockley. Stockley's drug interactions. 2002, 6, 1-15