Original Article

Use of Fixed Dose Combination in Hypertension in a Tertiary Care Hospital

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Abstract

Objective: *The present study was conducted to see the use Fixed dose combination (FDC) of antihypertensive drugs used in hypertensive patients in a tertiary care hospital.*

Methods: *It was an observational type of descriptive cross sectional study. The study was performed among 400 hypertensive patients (both indoor and outdoor) of Cardiology department in MMCH who received antihypertensive drug.*

Results: *Out of 400 hypertensive patients 67% were male and 33% were female. Maximum patients (54%) found in 40 to 59 years age group and ≥ 60 years age group (37.5%). Mean age of the patients was 55.02 ± 12.47 years. Mean systolic BP was 146.74 ± 28.28 and diastolic BP was 90.60 ± 14.27 mmHg and the highest percentage of patient were found in Stage 2 HTN (50.25%) according to JNC-7 guidelines. In our study 5 groups of antihypertensive were prescribed (ARB, ACEI, BB, Diuretics, and CCB).* FDC was prescribed in 22.75% prescription and Amlodipin+Olmesartan (50.60%) was the most common FDC.

Keywords: *FDC, antihypertensive drugs.*

Introduction

Hypertension is an important public health challenge because of the associated morbidity and mortality and cost of the society [1]. Almost three-quarter of the world's hypertensive population will be in developing countries. Hypertension is the commonest preventable cause of cardiovascular disease in the world [2]. Hypertension is a significant and asymptomatic chronic disease. The disease is usually asymptomatic until the damaging effect of hypertension such as stroke, myocardial infarction, renal dysfunction, visual problems etc [3]. Treating hypertension has been associated with about a 40% reduction in the risk of stroke and about a 15% reduction in the risk of myocardial infarction (World Health Organization (WHO)/ International Society of Hypertension (ISH) statement on management of hypertension 2003).

Therefore, the prevention, detection, treatment and control of this condition demand high priority[1]. Management of hypertension is an important step to decrease the mortality and morbidity of cardiovascular disease and to prevent uncontrolled complications[4]. The World Health Organization/ International Society of Hypertension(WHO/ISH) and JNC 7 categorized antihypertensive medications into six major classes, which include: angiotensin converting enzyme inhibitors (ACEI), angiotensin receptor blockers (ARB's), beta-blockers (BB), calcium channel blocker (CCB), diuretics and other antihypertensive agents such as α1-blockers, central α2 agonists and direct vasodilators[5]. However, the choice of antihypertensive drug class is influenced by many factors such as the presence of co-morbid conditions[6].

A combination treatment has been recommended as first line intervention, particularly in patient with severe hypertension. A number of drug in various combinations are generally used for long term management [1]. Combination therapy with two or more drugs having complementary mechanisms of action represents a type of innovation that has extended the range of treatment options in the management of many diseases. Combination products, also known as fixed-dose combinations, are combinations of two or more active drugs produced in a single dosage form. They provide the advantages of combination therapy while reducing the number of prescriptions and the attendant administrative costs. The World Health Organization (WHO) lists nearly 325 essential drugs, including only 19 of such drug combinations [7]. Hypertensive patients who are in stage 1 and stage 2 require a pharmacological intervention that is treatment by using various classes of antihypertensive either alone or combination. However combination antihypertensive medication is usually required to reach the target blood pressure. Medical audit improves the standards of medical treatment at all levels of health care delivery system. It is necessary to define prescribing pattern and to identify the irrational prescribing habit to drive a remedial message to the prescribers. Changes over time in terms of recommended guidelines and innovation in drug formulations have resulted in modification to the prescription patterns of antihypertensive drugs. Therefore, drug utilization studies which evaluate and 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 drug rationally. This kind of medical audit highlights the lacunae in the present prescribing practice of physicians and in improving the patient health care further[1].

Methods

This study was a record based observational type of descriptive cross-sectional study was conducted for a period of 6 months from January 2016 to June 2016 in Cardiology department of Mymensingh Medical College Hospital, Mymensingh. 400 patient were collected from both indoor and outdoor. This study includes hospital In-patients and Out-patients with hypertension with or without IHD and DM treated for hypertension at Cardiology department. The inclusion criteria were: Patient with the age group ≥18 years, hypertension with or without ischemic heart disease, hypertension with or without DM. Exclusion criteria

were: patients with disease like hepatic disease and pregnancy. Non-Random sampling was employed for collecting data. The entire relevant data were analyzed with the aid of Statistical Package for Social Sciences (SPSS) version 21 software to generate descriptive statistics. The data collected was analyzed with frequency, simple percentage, mean and standard deviation. The results presented in texts, tables and figures.

Observations and Results

Out of 400 patients, 268 (67%) were male and 132 (33%) were female. So, male were found more than their female counterparts.

Table I: Demographic Characteristics (age) of Patient

Demographic Characteristics	Male	Female	Total
Mean age (years)	56.45	52.12	55.02
Standard deviation	12.20	12.58	12.47
Minimum age (years)	20	25	20
Maximum age (years)	90	90	90

Table II: Overall Drug Utilization Pattern

Drug therapy		Frequency	Percentage
Monotherapy		147	36.75
Combination Therapy	Dual therapy	150	37.50
	Triple therapy	98	24.50
	Quadruple therapy	5	1.25
	Total	**253**	**63.25%**
Total		**400**	**100**

Table II shows among the hypertensive patients monotherapy was prescribed for 147 (36.75%) cases and Combination therapy for 253 (63.25%) cases. Among the combination therapy 150 (37.50%) received dual therapy, 98 (24.50%) received triple therapy and 5 (1.25%) received quadruple therapy.

So, it was found that maximum no. of patients received dual therapy (37.50%), followed by monotherapy (36.75%) and then triple and quadruple therapy.

Table III: Fixed Dose Combination

FDC	Frequency	Percentage
Amlodipin+Atenolol	08	8.79
Amlodipin+Olmesartan	46	50.60
Frusemide+Spironolactone	24	26.37
Losartan K+Hydrochlorothiazide	07	7.69
Olmesartan+Hydrochlorothiazide	06	6.59
Total	**91**	**100**

Table III shows out of 400 prescription FDC used only in 91 (22.75%) prescriptions. Most commonly prescribed FDC was Amlodipin & Olmesartan in 46 cases (50.60%) and then Frusemide & Spironolactone in 24 cases (26.37%), Amlodipin & Atenolol in 8 cases (8.79%), Losartan K & Hydrochlorothiazide in 7 cases (7.69%) and Olmesartan with Hydrochlorothiazide in 6 cases (6.59%).

Discussion

The study was conducted during the period of January 2016 to June 2016 in the department of Cardiology, Mymensingh Medical College Hospital, Mymensingh to evaluate the FDC (Fixed dose combination) of antihypertensive drugs used in hypertensive patients in a tertiary care hospital**.**

It was an observational type of descriptive cross sectional study.

In this study the prevalence of hypertension was seen more in male (67%) than their female counterparts (33%) which corresponds to the findings of other studies Joseph S, Varghese N & Thomas L [1], Konwar M, Paul PK & Das S [8] and Rachana PR, Anuradha HV & Shivamurthy MC [9].

In our study FDC were used in 22.75% prescription and 5 different FDC were used among them Amlodipin+ Olmesartan was the most commonly prescribed FDC (50.60%) followed by Frusemide & Spironolactone (26.37%), Amlodipin & Atenolol (8.79%), Losartan K & Hydrochlorothiazide (7.69%) and Olmesartan with Hydrochlorothiazide (6.59%). A study done by Rachana et al. (2014) and found fixed dose combination was prescribed for 35.04% cases among the FDC Thiazide diuretics+ ARB was the most commonly (45.68%) prescribed FDC which was not similar with our study[9]. Another study by Kothari and Ganguly 2015 found total six type of FDCs have been prescribed to the patients which was similar with our study[10]. Another study by Krishnagoudar, Sandeep & Ramanath 2011 found the combination of Loop diuretic and Potassium

Sparing Diuretic are the most common which was bit different from our study[11].

Conclusion

In the Framingham study, it has been estimated that hypertensive subjects were 2 to 3 times more likely to develop coronary heart disease (angina pectoris, myocardial infarction, sudden death) compared to the healthy non-hypertensive population group. The risk is 3 times greater for cerebrovascular diseases and 3.5 times greater for heart failure. More specifically, it has been reported that individuals with blood pressure values of 130-139/85-89 mmHg were significantly in higher risk of developing cardiovascular diseases compared to subjects with lower blood pressure. From our study it was concluded that HTN is more prevalent in male than female, in 40 to < 60 & ≥ 60 years age group.

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