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ANTIHYPERTENSIVE MEDICATION PRESCRIBING PATTERNS IN CRIMSON HOSPITAL

Mukesh Kumar Chaudhary*, Bidhya Pandey, Binita Thaiba, Janaki Pokhrel, Papina Rana and Mohan Chaudhary

Crimson College of Technology, Butwal-13, Rupandehi, Nepal.

*pharmatext@yahoo.com

Abstract

Hypertension is a leading contributor to the global burden of all causes of disease; continue its upward growth trends. Poor control of this highly preventable disease can lead to the development of ischemic heart disease, heart failure, stroke and chronic renal insufficiency. A prescription by a doctor may be taken as a reflection of physician's attitude to the disease and the role of the drugs in its management. The aim of this study was to investigate the use of antihypertensive drugs in hypertensive patients in order to establish the current trend of pattern of prescribing of antihypertensive drug and to identify whether such pattern of prescription is appropriate. A prospective study was undertaken in the outpatient department of Crimson Hospital, Tillottama, Rupandehi. Performa was used for collection of data and the data collected from all prescription were analyzed using MS-Excel and SPSS. A total of 100 patients were included in the study. The study shows that 70% of the patients were prescribed with monotherapy while 30% were prescribed with combination therapy. In monotherapy CCB (70%) was the mostly prescribed drug followed by ARB (27.1%) and beta blockers. In combination therapy CCBs+beta-blockers (53.3%) was the most commonly prescribed followed by ARB+diuretics (10%), CCBs+ARB (6.7%) and CCBs+diuretics (6.7%). The study concluded that most of the patients were treated with monotherapy and the most frequently prescribed class of antihypertensive drugs was CCBs and ARB. There were no multiple therapies prescribed.

Key words: Hypertension, Prescription pattern, Anti-hypertensive drugs, Diuretics.

Introduction

High blood pressure, coined "hypertension" is a hemodynamic function in which there is persistent abnormal elevation of systemic blood pressure, whether it is diastolic or systolic above the level of normal blood pressure of 140/90 mmHg. Hypertension is regarded as a silent killer and it has a relationship with other cardiac disease [1]. The disease is usually asymptomatic until the damaging effects of hypertension (such as stroke, myocardial infarction, renal dysfunction, visual problems, etc.) are observed. Hypertension is a major risk factor for coronary artery disease, myocardial infarction and stroke [2]. The worldwide burden of hypertension in 2000 was estimated to be 972 million or 26.4% of the adult population, with 333 million in economically developed and 639 million in economically developing countries. It has been estimated by 2025, 1.56 billion individual will have hypertension; an increase of 60% from 2000 [3]. In Nepal hypertension is very prevalent. The detail report within nation is unavailable, but there are some region based and local population based study on prevalence of hypertension. In Eastern Nepal one study estimated a prevalence of 34% hypertensive population among 14,425 individuals [4]. In another study conducted in Municipalities of Kathmandu, Nepal the prevalence of hypertension in the study population was 32.5% [5]. Overall prevalence of hypertension in Semi-Urban area of Nepal was fond to be 28.9% and the prevalence was increasing with age. The prevalence among 30 years of age was 11.1% whereas it was 44.8% in more than 70 years of age [6]. Different types of national and international guidelines have been published for the treatment of hypertension, but JNC7 guidelines recommend diuretics as the first line treatment for hypertension. On the other hand European guidelines suggest that any of the five antihypertensive classes can be used unless a special indication exists. In severe hypertension a combination therapy has been recommended as first line therapy. Generally for long term management a number of drugs in various combinations have been used [7].

Aims and objectives

The aim of this study was to evaluate the prescribing pattern of antihypertensive drugs and to determine the type of drugs commonly prescribed i.e. either monotherapy or combination therapy.

Material and methods

Study type

This was an observational, prospective, and non-interventional study.

Study site

This study was conducted in Crimson Hospital, Manigram, Rupandehi, Nepal.

Study duration

The duration of this study was 4 months.

Sample size

100 patient's prescriptions that fit in selection criteria were included.

Patient selection

Inclusion criteria

Patients with the age group > 20 yrs.
Alcoholic and non-alcoholic.
Smokers and non-smokers.
Hypertension with and without cardiovascular disease.
Hypertension with and without diabetes mellitus.
Patients receiving antihypertensive drugs with monotherapy or combination therapy.

Exclusion criteria

Pregnant women.
Age < 20 yrs.
Patients with liver or kidney disease.
Patients with opportunistic infections.

Tools

Performa

The Performa was prepared as give by WHO based prescription audit format. From which the data's such as age, sex, height, weight, ethnicity, dietary habit, diagnosis, and drug prescribed, etc.

Data analysis

Data analysis was done by using MS-Excel 2007 and SPSS, version 17.0.

Results and discussion

During the study period we collected a total of 100 patient's prescriptions as per inclusion criteria. The demography of the patients who were included in the study is presented in table-1

Age distribution of patients

The age distribution of patients is given in figure-1. In our study the maximum number of hypertensive patients belonged to the age group of 50-59 (27.0%) followed by the age group 60-69 (22.0%) and 21% of the patient in the age group of 40-49 years.

Gender distribution of patients

Out of 100 patients 51 were male patients and 49 were female patients indicating that hypertension is slightly more prevalent in male (Figure 2). The maximum number of male and female hypertensive patients belonged to the age group of 50-59 years.

Dietary status of patients

Dietary habit of the patients is shown in figure 3. In the present study maximum numbers of patients were non-vegetarian (87%) while 13% patients were vegetarian.

Occupational status of the patients

The majority of subjects were housewife (44%) followed by serviceman (16%), businessman (15%), teacher (7%), farmer (3%) and others (15%).

Ethnic distribution of patients

In our study the majority of subjects were Brahmin (40%), followed by Mongolian (34%), Newar (7%), Chhetri (5%) and others (14%).

Body mass index of the patients

Distribution of the patients in the different weight group during the present study is shown in figure 4. In present study it was observed that the majority of the subjects (73%) were of normal weigh followed by underweight (17%) and overweight (10%).

Stages of hypertension

The result of our study showed that the 63% of the patients belong to the stage-I, followed by 22% of the patient in pre hypertension and 9% of the patients belong to stage-II (figure-4).

Monotherapy

The various antihypertensive drugs and the number of patients in whom they were used under the class of mono therapy are shown in figure 5. The study found that 70% were prescribed with monotherapy. Among 70 patients 49 (70%) were found to be treated with CCBs, followed by 19 (27.1%) were treated with ARBs, 2 (2.9%) of the patients with beta blocker.

Dual therapy

In our study 30% of the patients were on dual therapy (Figure 6). In dual therapy 53.3% of the patients were found to be treated with combination of CCBs+beta blockers, followed by ARB+diuretics i.e. 13.3%.

Discussion

A prescription based study is one of the most professional methods to assess and evaluate the prescribing patterns of physicians [8]. In this study the maximum number of male and female hypertensive patients belonged to the age group of 50-59 years. In one of the study conducted in India found that patients under the age groups of 31-40 years and 41-50 years presented with more complaints of hypertension (25% each) than the other groups [7]. Similarly another study conducted in Pokhara valley, Nepal the majority of respondents were the age group of 60-69 years [9]. Our study reveals that hypertension is more prevalent in males (51%) than female (49%). This result is similar to one previous Indian study that also reported about 51% male as against 49% female hypertensive patients [10]. Another study conducted in Tamilnadu, India it was found that hypertension is more prevalent in males than in females [11]. The number of female patients (54.6%) and male patients (45.4%) was found to be anomalous in another Indian study on hypertensive patients [7]. Study conducted by Pradeep et al. in Indian, found almost nearly equal numbers of male and female hypertensive patients in their study [12]. In this study maximum numbers of patients were non-vegetarian. This is supported by another study that also found non-vegetarian subjects have high blood pressure and vegetarian diet has a significant role to reduce blood pressure in relation to non-vegetarian diet [13]. Meta-analysis of 7 controlled trials and 32 observational studies found that consumption of vegetarian diet is associated with lower blood pressure compared with consumption of omnivorous diets [14]. A series of studies conducted by Rouset et al. found that vegetarians were less obese, had lower cholesterol and lower clinic and home blood pressure than controls [15]. In a different study conducted in India comparing role of vegetarian and non-vegetarian diet on vascular reactivity found that better coping to mental stress in vegetarian and greater risk to develop future hypertension in non-vegetarian [16]. In a study conducted on preadolescent boys found that mean supine systolic and diastolic blood pressure in the case of non-vegetarian is more than the vegetarian [17]. It was observed that the majority of patients are housewife in this study. Similar type of result was found in a study conducted in Kathmandu, Nepal [18]. But in another study conducted in Pokhara Valley, Nepal, found that the majority of the respondents are businessman followed by housewife [9]. In another study conducted in California found that a positive

association between work hours and hypertension [19]. In our study the majority of subjects were Brahmin (40%), followed by Mongolian (34%), Newar (7%), Chhetri (5%) and others (14%). In a similar type of study conducted by Khan et al. in Pokhara Valley, Nepal, found that majority of respondents were Brahmin (34.2%), Newar (30.4%), Chettri (5.1%), Mongolian (15.2%) and 12.7% Muslim]9]. Another community based study in Duwakot, Nepal, found that there is an ethnic variation in the blood pressure distribution in the Nepalese population, which might be acting independent of the different life-style factors [20].

In present study it was observed that the majority of the subjects (73%) were of normal weigh followed by underweight (17%) and overweight (10%). In another study conducted in India found that the majority of the patients were in normal weight followed by overweight and underweight [21]. The majority of patients were of normal weight (51.07%) followed by overweight (44.39%) and underweight (3.90%) in another study conducted in South India [22]. The result of our study showed that the majority of the patients belong to the stage-Ihypertension, followed by pre hypertension and stage-II hypertension. In a similar type of study conducted in India found that 6.6% male and 2.2% female were from pre hypertension, 40.2% male and 21.4% female were from stage-I and 17.8% male and 11.8% female patients were from stage-II hypertension [11]. It was observed that 70% of the patients were prescribed with monotherapy and 30% of patients were prescribed with dual therapy. There were no multiple therapies prescribed. The study shows that higher usage CCBs followed by ARBs and beta-blockers as monotherapy. In a similar type of study conducted in South India they found that 38.04% were prescribed with monotherapy. In monotherapy 48.7% were on CCBs, followed by 28.2% with ARBs, 10.25% with ACE inhibitors, 7.69% with beta-blockers and 5.12% with diuretics [21]. In another study they found 36% were on monotherapy and ACE inhibitors was the most commonly (55.55%) prescribed drug class as monotherapy [23]. In another study conducted in Pokhara Valley, Nepal, found that 80% of the respondents were prescribed with monotherapy and CCBs was prescribed to majority of the respondents [9]. Even though diuretics are suggested as initial first line therapy for hypertension by JNC8 guidelines, the reason behind their lower use could be due to adverse effects of diuretics [24]. In dual therapy 53.3% of the patients were found to be treated with combination of CCBs+beta-blockers, followed by ARB+diuretics. In another study conducted in Nepal found that 16% were prescribed with dual therapy and in dual therapy majority were prescribed with CCB+beta-blockers and ARB+diuretics [9]. Similarly in one Indian study 115 patients were prescribed with dual therapy, in this 63.4% patients were found to be treated with ARB+diuretics, followed by beta blockers+CCBs (10.43%) [22]. In another Indian study they found 30% of patients prescribed with dual therapy. Among the dual therapy 14% patients received a combination of ARB and diuretics, 10% received a combination of ARB and CCB, 4% received CCB and diuretics and 2% received a combination of CCB and beta-blocker [24].

Conclusion

The present study was carried out to assess the current trends in prescribing patterns of antihypertensive drugs in the treatment of hypertension in the outpatient department of Crimson Hospital. From this study it is concluded that hypertension is more common in males than in females. It is also more frequently in non-vegetarian than vegetarian. The most of the outpatients with hypertension received monotherapy and most frequently used class of drugs were the CCBs and ARBs. As per combination CCBs+betablockers were mostly prescribed. There was no three or four drug combination prescribed. The study showed that most of the patients received monotherapy and this supports rationale prescribing pattern of antihypertensive drugs and also this was in accordance of WHO guidance. The incidence of hypertension is dependent upon several factors like age, ethnicity, dietary habit, environmental and physiological factors, hence further studies are necessary to setup a rationale or pattern for the choice of medication; taking into consideration the demographic factors involved in the prevalence of hypertension.

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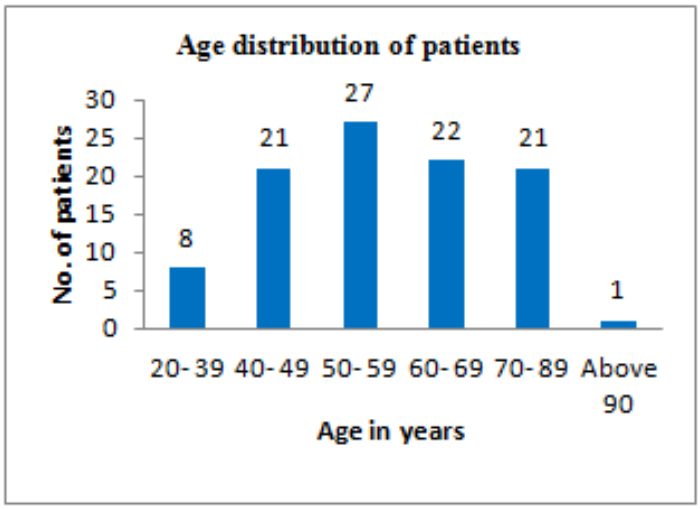

Figure 1: Age distribution of patients

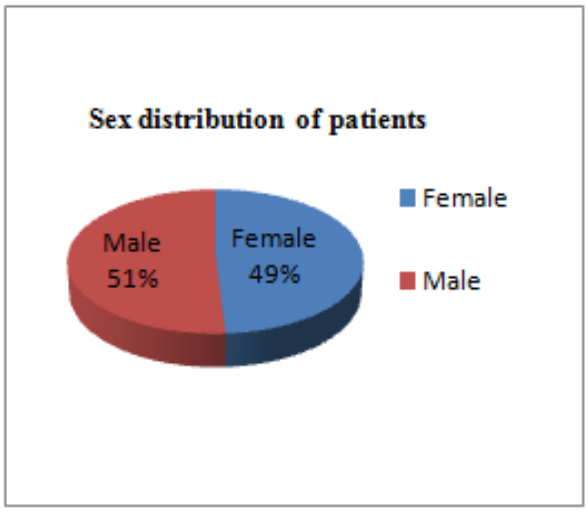

Figure 2: Sex distribution of patients

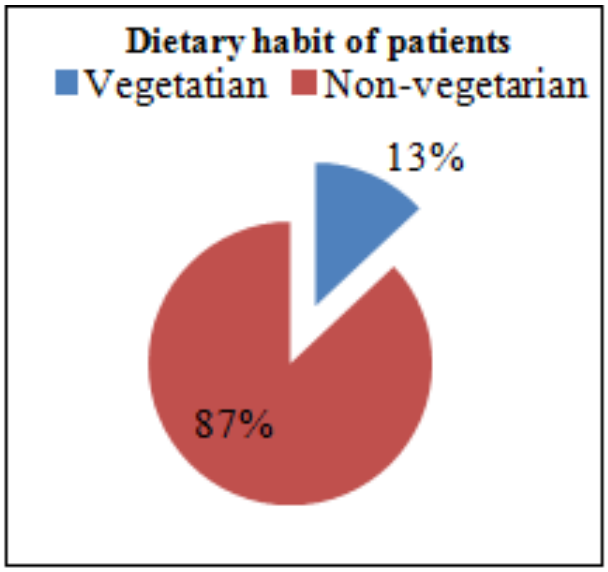

Figure 3: Dietary habit of the patients

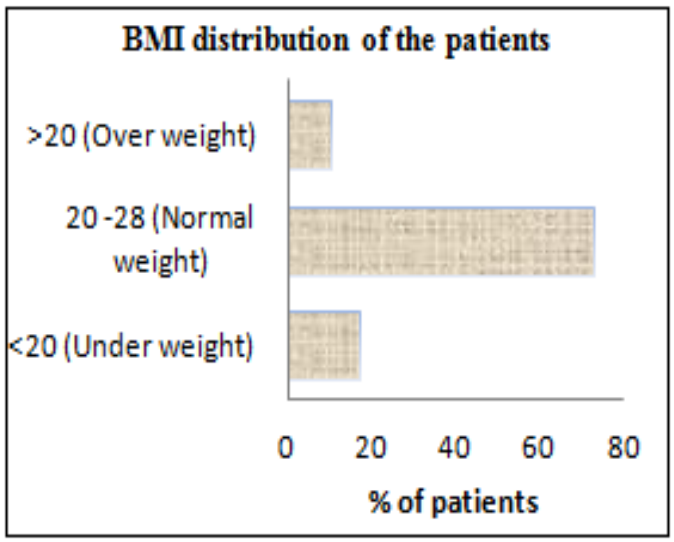

Figure 4: BMI distribution of the patients.

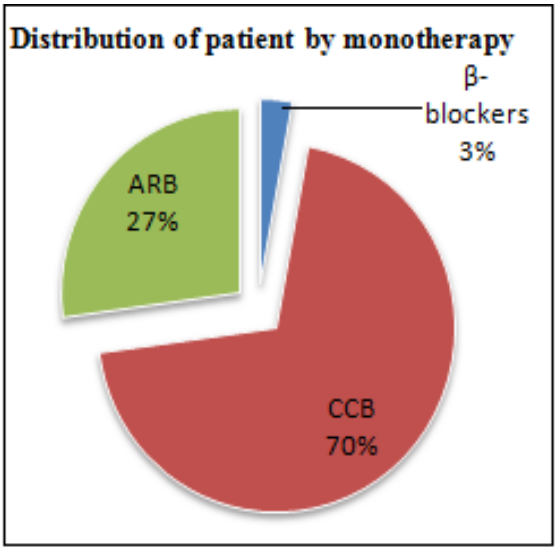

Figure 5: Patients receiving monotherapy.

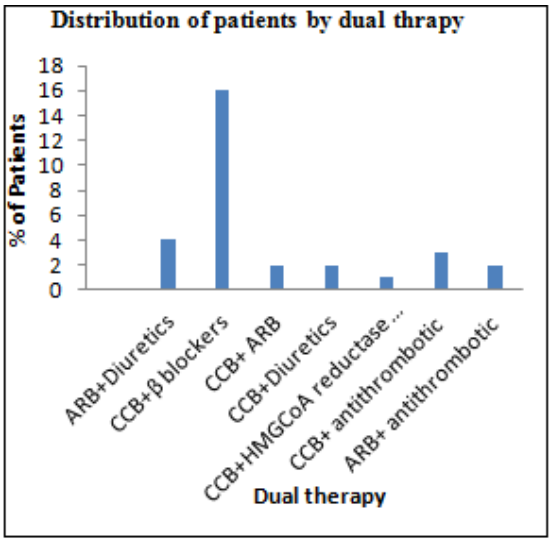

Figure 6: Patients receiving dual therapy

Table 1. Demographic characteristics of hypertensive patients

Demographic Parameter	All	Male (%)	Female (%)
Gender	100	51	49
Age groups (years)			
20- 39	8	3	5
40- 49	21	11	10
50- 59	27	15	12
60- 69	22	14	8
70- 89	21	7	14
Above 90	1	1	0
Body mass index (kg/m^2)			
<20 (Under weight)	17	7	10
20 -28 (Normal weight)	73	38	35
>28 (Over weight)	10	6	4
Ethnicity			
Brahmin	40	25	15
Chhetri	5	2	3
Newar	7	3	4
Mongolian	34	15	19
Others	14	6	8
Occupation			
House wife	44	0	44
Service	16	14	2
Business	15	14	1
Farmer	3	3	0
Teacher	7	7	0
Others	15	13	2