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Research Article

A study of the prescribing pattern of antihypertensive drugs in a Tertiary Care Teaching Hospital of Andaman & Nicobar IslandC Dinesh M Naidu¹ and Anand Vardhan^{*2}¹Professor, Department of Pharmacology, Andaman & Nicobar Islands Institute of Medical Sciences, Port Blair, India²Senior Resident, Department of Pharmacology, Andaman & Nicobar Islands Institute of Medical Sciences, Port Blair, India.

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Article History:*Received:** 05/05/2017**Revised:** 09/05/2017**Accepted:** 09/05/2017**DOI:** <https://doi.org/10.7439/ijpr.v7i5.4143>**Abstract**

Introduction: Hypertension is the increased systolic blood pressure of ≥ 140 mm Hg or diastolic blood pressure of ≥ 90 mm Hg. The antihypertensive drugs currently available are chosen on the basis of their efficacy, side-effects, and cost. Accordingly, a need to survey the pattern of usage of antihypertensive drugs is must, to see if the current usage is rational and in concordance with current guidelines for treatment of hypertension. Therefore this study was carried out with the aim of analyzing the pattern of antihypertensive drugs being prescribed and its adherence with JNC-8 guidelines, in a tertiary care Teaching hospital of Andaman & Nicobar Islands, India.

Material & methods: A cross-sectional, observational study was done in ANIIMS, Port Blair, India over a period of 6 months from October 2016 to March 2017, in which analysis of the prescriptions of patients of essential Hypertension was done. A total of 870 prescriptions were analyzed based on age group, gender, number of antihypertensives, combination/ or monotherapy. The results obtained were expressed as percentages & proportion and were compared with JNC-8 Guidelines.

Observations: In this study, a total of, 870 prescriptions were analyzed and it was observed that male patients with hypertension were 586(67.3%), and female patients were 284(32.7%), with male: female ratio of 2.05:1. Also most common therapy was the combination therapy in 630(72.4%) patients, out of which a CCB+ Diuretic combination was the commonest in 318(50.4%), followed by ACE-I + Beta Blocker combination in 180(28.6%) patients. Most common Drug used as monotherapy was Diuretics in 110(45.8%) patients, followed by Calcium channel blockers in 82(34.2%) patients, followed by ARBs in 48(20.0%) patients.

Conclusion: The trend of hypertension is on the rise, if treated rationally this disease can be overcome. This study suggests the trend of prescribing of antihypertensive drugs in ANIIMS Port Blair, India and will provide a baseline data for similar studies in future.

Keywords: Prescription monitoring, Antihypertensive drugs, JNC 8, Drug Utilisation.

1. Introduction

As per the definition, Hypertension is the elevation in the systolic blood pressure of ≥ 140 mm Hg or diastolic blood pressure of ≥ 90 mm Hg.[1] The incidence & prevalence of Hypertension rises with age as evident by the data published in United States, the prevalence of hypertension is 28.7%, but the same rises to 65.4% in those above 65 years of age.[2] Cardiovascular morbidity and mortality increases to a significant number when both

systolic and diastolic blood pressures are high.[4] Hypertension is one of the leading causes of deaths in both developed & developing countries, as it is the fourth contributor to premature death in developed countries and the seventh in developing countries.[5] Systolic blood pressure, if lowered by 10-12 mm Hg and diastolic blood pressure by 5-6 mm Hg, reduces the risk of stroke by 35-40% and also reduces the risk of coronary artery disease by 12-16% within 5 years of treatment.[2] With the advances

in drug therapy over a period of time, antihypertensive drug therapy has improved a lot as the combinations are available for the better control of blood pressure, & better patient's compliance.[6] Antihypertensive drugs are chosen nowadays based on their efficacy, adverse effects, and the cost of drugs available. Accordingly, a need to survey the pattern of usage of antihypertensive drugs is must, to see if the current usage is rational and in concordance with current guidelines for treatment of hypertension.[7] Studying the prescribing patterns is that part of a medical audit which seeks monitoring, evaluating and if necessary, suggesting necessary modifications to the prescribers to achieve rational and cost effective medical care.[8] Therefore this study was carried out with the aim of analyzing the pattern of antihypertensive drugs being prescribed in a tertiary care teaching hospital of Andaman & Nicobar Islands, India.

2. Materials & methods

A cross-sectional, observational study was done in Andaman & Nicobar Islands Institute of Medical Sciences (ANIIMS), Port Blair, India after obtaining the approval from institutional ethics committee. This observational study was done over a period of 6 months from October 2016 to March 2017, in which analysis of the prescriptions of patients of essential Hypertension was done. Patients having none of the exclusion criteria were enrolled in the study. Data thus obtained was entered into Microsoft excel software and were analyzed based on age group, gender, number of Anti hypertensives, combination/ or monotherapy. The results obtained were expressed as percentages & proportion. The results were thus compared with Joint National Committee (JNC)-8 guidelines. Inclusion & Exclusion Criteria were as follows:-

2.1 Inclusion Criteria

1. Prescriptions of the patients with essential hypertension as the diagnosis.

2.2 Exclusion Criteria

1. Pregnant & Lactating females
2. Hypertensive patients with ischemic heart disease
3. Congestive cardiac failure
4. Arrhythmias
5. Chronic kidney disease
6. Hypo/Hyperthyroidism
7. Diabetes Mellitus
8. Respiratory diseases like Bronchial Asthma, Tuberculosis
9. Peptic ulcer or other co-morbidities

3. Observations

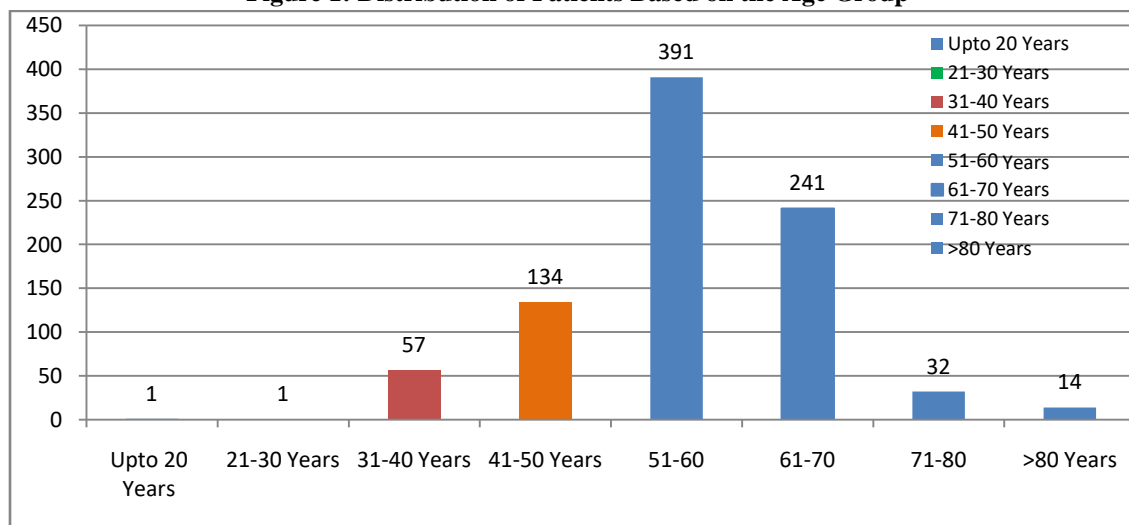
In this study, a total of, 870 prescriptions were analyzed and it was observed that male patients with hypertension were 586(67.3%), and female patients were 284(32.7%), with male: female ratio of 2.05:1. (Table 1)

Table 1: Distribution of patients based on gender

S. No	Gender	No. of Patients	Percentage
1	Male	586	67.3%
2	Female	284	32.7%
Total		870	100%

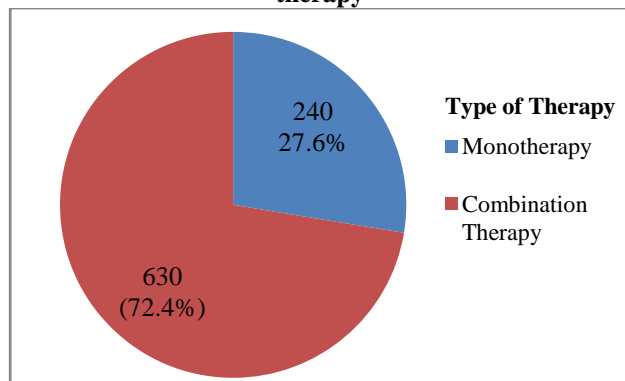
In the present study, the most common age group affected with the disease was 51-60 years affecting 391(44.9%) patients, followed by 61-70 years age group with 241(27.7%) patients, followed by 41-50 years age group with 134(15.4%) patients, then with 57(6.5%) patients in the 31-40 years age group, least affected age groups were upto 20, and 21-30 years age group of patients with 1 patient in each age group. (Figure 1)

Figure 1: Distribution of Patients Based on the Age Group



Also most common therapy was the combination therapy in 630(72.4%) patients, and monotherapy was given to 240(27.6%) patients. (Figure 2)

Figure 2: Distribution of patients based on type of therapy



Out of the combination therapy in 630(72.4%) patients, CCB+ Diuretic combination was the commonest in 318(50.5%), followed by ACE-I + Beta Blocker combination in 180(28.6%) patients. (Table 2)

Table 2: Patient distribution based on type of combination therapy

Drugs	No. of Patients	Percentage
CCB+ Diuretic	318	50.5%
ACE-I + Beta Blocker	180	28.6%
BB+CCB	84	13.3%
ACE-I+Diuretic	39	6.2%
CCB+ARB+Diuretics	09	1.4%
Total	630	100%

CCB: Calcium Channel Blockers; **ACE-I:** Angiotensin Converting Enzyme Inhibitors; **ARB:** Angiotensin Receptor blocker; **BB** – Beta Blockers

Also in the present study, Monotherapy was given to 240(27.6%) patients, out of which the most common Drug used was Diuretics in 110(45.8%) patients, followed by Calcium channel blockers in 82(34.2%) patients, followed by ARB's in 48(20.0%) patients. (Table 3)

Table 3: Patient distribution based on drug given in monotherapy

Drug	No. of Patients	Percentage
Diuretics	110	45.8%
Calcium Channel Blockers	82	34.2%
Angiotensin Receptor Blocker	48	20.0%
Total	240	100%

4. Discussion

A prescription audit is one of the most efficient methods to analyze the prescribing mind-set of physicians.[9] In the present study, hypertension was more prevalent in males (67.3%) as compared to females (32.7%) with male: female ratio of 2.05:1. This observation is similar to the study done by Jhaj *et al*[10]. Combination

therapy was preferred by the clinicians in this study as 630(72.4%) received a combination of drugs while 240(27.6%) patients were prescribed monotherapy which is similar to the results obtained in a study by Mancia *et al*[11] which states that combination therapy seems to be a rational approach to reduce the cardiovascular mortality. In the present study it was observed that the most common drug in monotherapy were diuretics in 110(45.8%), which is in accordance with JNC 8 guidelines as diuretics are recommended as initial first line therapy for hypertension by JNC-8 guidelines.[12] Also it was found that 56(7.1%) prescriptions were irrational, remaining 724 prescriptions were rational as per the JNC 8 guidelines.[12]

5. Conclusion

The present study concludes that combination therapy was preferred by the physicians of the ANIMS Port Blair for hypertension. Diuretics were the most frequently prescribed drug class as per the guidelines. Most of the physicians are familiar with JNC 8 guidelines but were not following them as 7.1% prescriptions were irrational. In order to promote rational use of antihypertensive drugs, JNC 8 guidelines must be followed.

Conflicts of Interest- None

Source of Funding- Nil

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