

**SURVEY OF PRESCRIPTION PATTERN OF ANTI-HYPERTENSIVE DRUGS
IN HYPERTENSIVES & HYPERTENSION ASSOCIATED DIABETICS****TASNEEM SANDOZI*¹ AND VAMSI KRISHNA EMANI*²**¹ Department of Pharmacology, Deccan College of Medical Sciences, Hyderabad² Department of Medicine, Deccan College of Medical Sciences, Hyderabad**Corresponding Author* tasneemsandozi@yahoo.com**ABSTRACT****OBJECTIVE:**

To evaluate drug utilization in hypertensives and diabetic hypertensives in a tertiary care Princess Esra Hospital, Hyderabad, India.

METHODS:

This was a cross-sectional study done in the outpatient department of Internal Medicine at Princess Esra Hospital, Hyderabad. It was done in 2 phases between 2008 and 2009-10.

RESULTS:

300 patients were studied in 2008 (phase I) and 450 patients were studied in 2009-10 (phase 2). In phase 1, 59% of patients were on mono-drug therapy whereas in phase 2, 72% of patients were on mono-drug therapy. Calcium channel blockers (CCBs) (35.59%) were most commonly used in phase 1 whereas in phase 2, angiotensin converting enzyme inhibitors (ACEIs) (47.24%) were most commonly used. In phase 1 -- 41% were on combinations and the combination of ACEIs and diuretics (29.27%) was most commonly prescribed. In phase 2 -- 28% were on combinations and the combination of beta-blockers and CCBs (28.58%) was most commonly prescribed. 189 diabetic hypertensive prescriptions were evaluated (84 in phase 1 and 105 in phase 2). 50% of these patients were on ACEIs and 28.58% were on combination therapy of ACEIs and diuretics.

CONCLUSION

In this study, when compared to phase 1 there is a drastic increase in usage of ACEIs in phase 2 as mono-drug regimen and a significant decline in usage of beta-blockers in mono-drug regimen. In combinations, usage of CCBs and beta blockers increased. In diabetic hypertensives the use of ACEIs and angiotensin receptor blockers (ARBs) alone or in combination were prescribed to nearly 80% of patients.

KEY WORDS

Drug Utilization, Hypertension, ACE inhibitors, Diabetes Mellitus, Calcium Channel Blockers.

INTRODUCTION

Hypertension (HTN) is one of the major chronic diseases resulting in high morbidity and mortality in the world population. Prevalence of HTN in India is reported to vary from 4-15% in urban and 2-8% in rural population. Socio-economic, behavioural, stressful lifestyle and nutritional issues of the people led to enormous increase of cardiovascular diseases.

HTN and Diabetes Mellitus (DM) frequently coexist which increases with age. HTN is about twice as common in patients with DM than in those without (8%). [1] As shown by Helsinki's heart study prevalence of HTN is 30% amongst NIDDM patients. [2]

Drug utilization studies which evaluate and analyze the drug therapy in HTN and HTN associated with DM is very essential from time to time to observe the prescribing attitude of physicians with the aim of rational use of drugs and to minimize the adverse drug reactions (ADRs).

PATIENTS & METHODS

Study design:-

This study was a cross sectional study in the outpatient department of Internal medicine at Princess Esra hospital, a tertiary care hospital attached to Deccan College of Medical Sciences, Hyderabad.

It was done in 2 phases.

Phase 1 - 1st March to 31st May 2008 (90 days).

Phase 2 - from 1st November 2009 to 31st January 2010 (90 days).

Data collection:

The demographic data was collected from each patient enrolled for the study

METHODS

Analyzing the above prescriptions the following indicators were noted –

- a) Average age of men and women.

- b) Men:Women ratio
- c) Average number of drugs per prescription
- d) Percentage of drugs prescribed by generic name and brand names
- e) Recording of prescriptions with mono-therapy and combination therapy for HTN patients and those with HTN & DM.

Using the above indicators data analysis was done.

RESULTS

In phase 1 total number of cases recorded was 300. 47% (n = 14) were men and 53% (n= 159) were women. The average age of women was 58.7 yrs (34-82 yrs).

Average number of drugs per prescription was 4.68 and the generic name to brand name ratio was 8:460. 59% of the patients received mono-therapy. The most prescribing drug in phase 1 was calcium channel blocker (CCB), amlodipine (35.59%) followed by beta blockers atenolol and metoprolol (33.89%), angiotensin converting enzyme inhibitors (ACEIs) (15.2%), diuretics(10.16%) and angiotensin receptor blockers (ARBs) (3.38%) in HTN cases.

84 (28%) out of 300 patients were having associated DM. 30% of this group were on combination therapy, the most common combination being ACEIs and diuretics (28.58%). 70% of the patients were on mono-therapy and the most commonly prescribed drug group was ACE inhibitors (50% -Enalapril & Ramipril), followed by beta blockers (14.28%), CCBs (3.5%) and ARBs (3.57%).

In phase 2, 450 patients were registered. 52% were men and 48% were women. 105 of these were having DM. Average age of men and women was 57.10 years and 55.47 years respectively. Average number of drugs prescribed per patient was 3.97 and generic name and brand name ratio was 2: 594.

72% of the patients were on mono-therapy. Most prescribed drugs were ACEIs (47%) followed by CCBs (25.85%), beta blockers (12%), ARBs (10.8%) and diuretics (3.7%).

28% of the 450 patients were on combination therapy, the most common combination being beta blockers and CCBs (28.58%) followed by ACEIs and diuretics (19%) and ARBs and diuretics (11.95%).

A total of 189 diabetic hypertensive patients were studied. The most commonly prescribed group of drugs was ACEIs and the commonest combination was ACEIs and diuretics.

The cost analysis shows:

ACEI	-1775 INR	per annum
ARBs	- 2520 INR	per annum
Diuretics	-1533 INR	per annum
Beta blockers	- 587 INR	per annum
CCBs	- 870 INR	per annum

DISCUSSION

Results of this study show that mono-drug therapy with ACEIs is very common and effective in this area. This may be attributed to cost of the drug, patient's compliance, good response and less incidence of adverse events.

As per observation the use of ACEIs and ARBs has significantly increased with a significant 'p' value ($p < .01$). As compared to previous phase done by Kulkarni et al [3] in which the

most commonly prescribed drug group was CCBs (48.1%), then beta blockers (46.27%). ACEIs were only prescribed to an extent of 3.9% and diuretics 1.9%. According to Warl & Hansen et al hypertension is better controlled by combination therapy but this study shows mono-therapy to be more common and effective. In this study (1&2) combination therapy with 2 drugs was very common followed by 3 drugs. Compared to previous studies of Kulkarni et al [3] who reported the most common drug combination of beta blockers and CCBs this study shows the combination of ACEIs and diuretics as the most common

CONCLUSION

In conclusion, based on the collected data there is significant and rational change in the prescribing pattern from phase 1 to phase 2 and also when compared to previous studies. The lacuna in the present prescribing pattern is under utilization of diuretics.

Further studies from time to time are required in drug utilization pattern and standard treatment guidelines to be circulated among practicing physicians.

Comparison of antihypertensive drug utilization in 2 phases

DRUG GROUPS	NEW STUDY (%) PATIENTS	OLD STUDY (%) PATIENTS	P VALUE
<u>MONODRUG THERAPY:</u>			
CCBs	35.59%	26.85%	>0.05
Beta blockers	33.89%	12.03%	0.0002
ACE inhibitors	15.29%	47.24%	0.000001
Diuretics	10.16%	3.7%	>0.05
ARBs	3.38%	10.18%	>0.05
<u>COMBINATION THERAPY</u>			
Beta blockers & CCBs	7.32%	28.58%	0.00002
Beta blockers & ACE inhibitors	9.76%	0%	--
ACE inhibitors & Diuretics	29.27%	19.05%	>0.05
Beta blockers & Sympathetic inhibitors	7.32%	0%	--
ACE inhibitors & CCBs	14.62%	9.52%	>0.05
ARBs & Diuretics	0%	11.90%	--
CCBs & Diuretics	0%	9.52%	--
ARBs & CCBs	0%	7.15%	--
<u>DIABETES & HTN TREATMENT</u>			
ACE inhibitors	50%	42.86%	>0.05
Beta blockers	14.28%	0%	--
ACE inhibitors & Diuretics	28.58%	17.15%	>0.05
ARBs & Diuretics	0%	8.57%	--
CCBs	3.57%	14.29%	0.01347
ARBs	3.57%	11.43%	>0.05

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