

Research Article

**A Study on Prescription Pattern of Antihypertensive Agents in Chronic Renal Failure Patients and Assessment of Medication Adherence****Neethu Joseph*, Dr. Yogananda R, Dr. Bharathi DR, Varsha Padman, Dr. Sandeep GN**

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Received: 09-05-2017; Revised: 16-07-2017; Accepted: 30-07-2017.

ABSTRACT

There is a strong relationship between Hypertension (HTN) and Chronic Kidney Disease (CKD). HTN is an important cause and highly prevalent in CKD patients, contributing to the high cardiovascular risk for this particular population. This study aims in the management of HTN in CKD patients. The objective of the study is to assess prescription pattern of antihypertensive agents in Chronic Kidney Disease patients and to assess the medication adherence. This was a prospective observational study which was carried out for a period of six months at Medicine department of Basaveshwara Medical College Hospital and Suneetha Kidney Care and Dialysis Centre, Chitradurga. A total of 120 CKD patients with HTN were the participants of this study. Among 120 participants 72.5% were males and 27.5% were females. 34.2% were found between the age group of 60-69 years. Among the population, 50% of patients were smokers. The recorded value of systolic blood pressure was 172.17 ± 21.309 and diastolic blood pressure was 97.33 ± 13.704 . It was found that 89 74.16% of patients were prescribed with Calcium channel blockers. The most commonly prescribed Calcium channel blockers was Amlodipine 50% and most participants were treated with Multi-drug therapy. Medication adherence of the participants had a significant difference between first visit & follow up at 5% level of significance with p value 0.000. In CKD patients the use of antihypertensive drugs did not diverge from the National Kidney Foundation Kidney Disease, Outcome Quality Initiative guidelines. The Pharmacist can play a major role in the medication adherence of CKD Patients.

Keywords: Chronic Kidney Disease, Hypertension, Medication adherence.**INTRODUCTION**

The relationship between HTN and CKD is cyclic.¹ The important cause of End-Stage Renal Disease (ESRD) is HTN and there is a strong evidence that HTN accelerates the progression of renal disease.² On the other hand, the prevalence of HTN in CKD patients are very high, which may progress to high cardiovascular risk in CKD patients.¹ Patients with CKD have more chances to die, largely from cardiovascular disease (CVD).³ Once they develop ESRD, dialysis patients have eight times the mortality rate of their age-matched counterparts in the general population, with cardiovascular causes accounting for more than 50% of deaths.⁴ In this particular population maintaining the target BP goal, the administration of two anti hypertensives are necessary from the initial stage, especially if the systolic blood pressure (SBP) is ≥ 150 mmHg. In such cases an anti-renin-angiotensin-aldosterone system (RAAS) drug and either a Diuretic or Calcium Channel Blocker (CCB) are preferred.⁵

So the present study was taken for assessing the prescription pattern of anti hypertensives and also to assess the medication adherence in CKD patients. This helps in better controlling of hypertension, preventing the progression of CKD and cardiovascular complications and hence improves the quality of life of the CKD patients.

MATERIALS AND METHODS

This prospective observational study was conducted at General Medicine department in Basaveshwara Medical College Hospital & Research Centre, Chitradurga and Suneetha kidney Care and Dialysis centre Chitradurga, Karnataka over a period of six months (November 2015 to april 2016). The study was approved by the Institutional Ethical Committee of SJM College of Pharmacy, Chitradurga. All CKD patients with HTN who were presented to the Medicine in-patient and out-patient department of the hospital and dialysis centre during the study were enrolled. Patients who were diagnosed as acute renal failure and who were diagnosed as Chronicrenal failure without Hypertension are excluded from the study.

The patients demographic details, medical and medication history, clinical data such as diagnosis, clinical illness, drugs details such as name of the drug, dosage, route, frequency and other relevant details were collected by reviewing their prescriptions, medical records and by interviewing the patients and/or care takers were documented in a suitably designed individual case record form. In order to know the Medication Adherence a specially designed questionnaire was provided i.e., Morisky Medication Adherence scale. After one month the same questionnaire was given to assess the improvement in medication adherence.



Statistical Analysis

Using the Statistical Package for Social Service (SPSS) 16 version, the results were analyzed by Non parametric Wilcoxon signed rank test. A *p* value less than 0.05 were considered as statistically significant.

RESULT AND DISCUSSION

Gender Distribution

A total of 120 patient’s data was collected from in-patient and out-patient department from the hospital and dialysis centre during a period of six months. Among the whole 120, 87 were males and 33 were females. This study showed that the prevalence of CKD is more in males than in females.

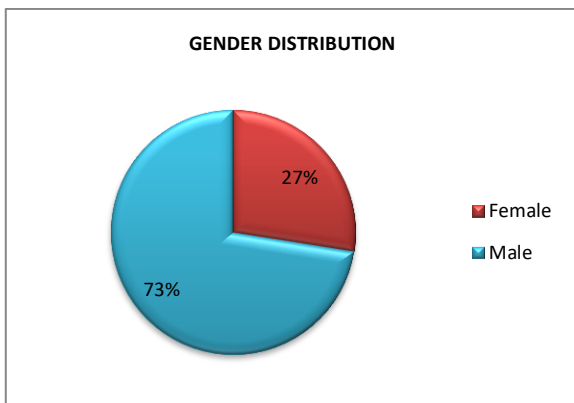


Figure 1: Sex Distribution

Distribution of Patients According to Age

34.2% of patients were found between 60-69 years followed by 18.3% of patients were found between age groups 50-59 and 70-79 years, The maximum age of patients in the study population was 85 years and minimum age was 30 years. The mean age of the study population was found to be 58.79±13.53.

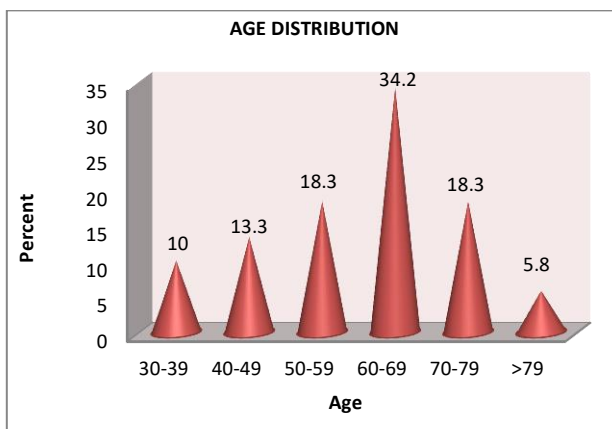


Figure 2: Distribution of Patients According to Age

Assessment of Social History of Patient

Smoking and alcoholism are the major social histories contributing to kidney failure. In this study, among 120 patients, 50% of patients were smokers and 25% were alcoholic.

Table 1: Distribution of social History

Social History	No of Patients	Percent
Smoking	60	50%
Alcoholism	30	25%
Nil	50	41.67%

Assessment of Clinical Parameters

The recorded value of systolic blood pressure was 172.17±21.309 and diastolic blood pressure was 97.33±13.704. The mean Blood Urea Nitrogen level was 96.61±29.527 and Serum creatinine level was 5.8831±3.297. Most of the patients were found to be hyperkalemic and the mean potassium level was 6.8181±1.30.

Table 2: Clinical parameters

Lab Data	Mean	Std. Deviation
BUN(mg/dl)	96.61	29.527
Sr Cr(mg/dl)	5.8831	3.29642
Potassium	6.8181	1.29173
SBP	172.17	21.309
DBP	97.33	13.704

Prescription Pattern of Antihypertensive Agents

Antihypertensive drugs used in the study population were identified and categorized. It was found that Calcium channel blockers 74.16%, Diuretics 40%, Beta blockers 30%, α blocker 10.17%, Angiotensin receptor blockers and centrally acting sympatholytics 10%, Mixed alpha beta blockers 4.1% and Angiotensin converting enzyme inhibitors 1.6% were the various antihypertensive drugs prescribed to the study population.

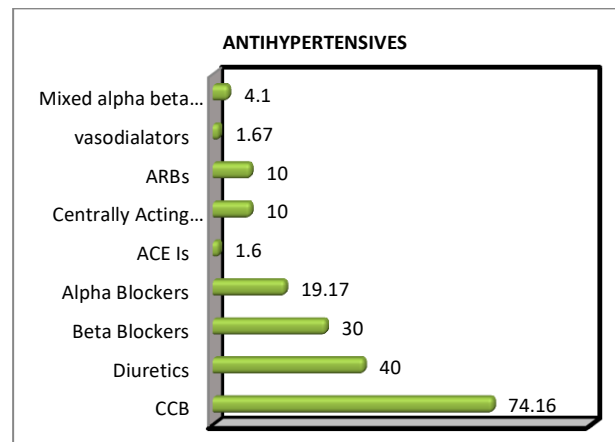


Figure 3: Prescription Pattern of Antihypertensive Agents

Patterns of use of CCBs prescribed in CKD patients with HTN.

The most commonly prescribed CCBs in this study was Amlodipine 50% followed by cilnidipine 17.5% and 6.7% nifedipine. In this study 31 patients were not prescribed with CCBs.



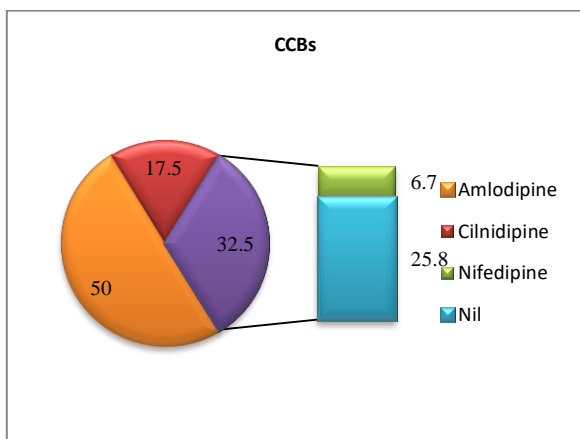


Figure 4: Patterns of use of CCBs prescribed in CKD patients with HTN.

Assessment of Treatment Pattern

Most of the CKD patients with HTN were treated with Multi drug therapy. 59.2% of patients were taking multitherapy and 40.8% of patients were taking monotherapy.

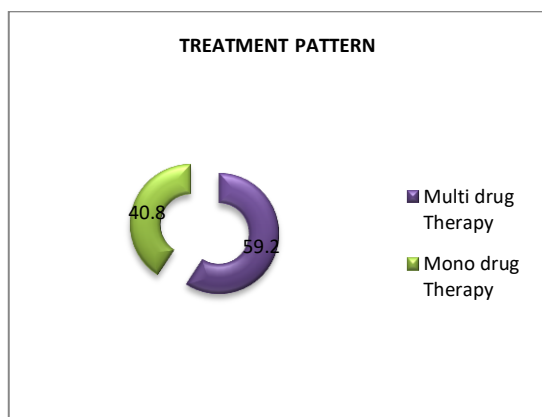
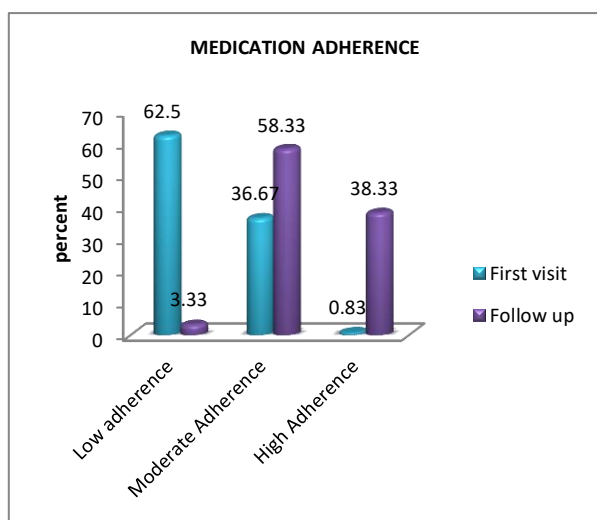


Figure 5: Distribution of Treatment Pattern



Z= -9.7

p=0.000

Figure 6: Comparison of Medication Adherence in first visit & follow up

Medication Adherence

The medication adherence of each patient were assessed by using Morisky medication adherence scale 8 on the first visit and follow up and was compared. Here we had applied non parametric Wilcoxon signed ranks test to compare the medication adherence in first visit & follow up by using SPSS software, version 16. The P value of the test was found to be 0.000, which indicates that there is a significant difference between first visit& follow up at 5% level of significance.

DISCUSSION

This study has enrolled 120 CKD patients with HTN. Among the whole 120, 87 were males and 33 were females. This study showed that the prevalence of CKD was more in male than females. A similar study was conducted by Sanju AP, *et al.*, on Prescribing Pattern and Cost Effectiveness Analysis of Antihypertensive Drugs in Chronic Kidney Disease Patients which reveals that among 200 prescriptions, 141 were males and 59 were females.⁶ Another study conducted by Bhanupriya B *et al.*, on Pattern of antihypertensive drug utilization among Chronic Kidney Disease patients concluded that among 95 case records, CKD was more common in males, with male to female ratio of 4:1.⁷

Saju AP, *et al.*, conducted a study on Prescribing Pattern and Cost Effectiveness Analysis of Antihypertensive Drugs in Chronic Kidney Disease Patients and found out that, maximum number of patients, 66 (33%) were found between 51-60 years.⁶ Dasari P *et al.*, conducted a study on Management of Co-morbidities in Chronic Kidney Disease. In this, maximum participants found in the range 54-62 are (22%) than other age groups.⁸ In this study among 120 participants 41 were found between 60-69 years followed by 18.3% patients were in age groups 50-59 and 70-79 years.

Yacoub R *et al.*, conducted a cross sectional study on Association between smoking and Chronic Kidney Disease and concluded that Smoking significantly increases the risk of CKD when compared to nonsmokers.⁹ White SL *et al.*, conducted a study on Alcohol consumption and 5-year onset of Chronic Kidney Disease and found out that moderate-heavy alcohol consumption may be a risk factor for albuminuria.¹⁰ Present study reveals that 50% of patients were smokers and 25% were alcoholic.

In the present study the most commonly prescribed antihypertensives were found to be CCBs 74.16%, Diuretics 40%, Beta blockers 30%. Bhanu Priya B *et al.*, conducted a study on Pattern of antihypertensive drug utilisation among chronic kidney disease, among the patients, most commonly prescribed was CCBs (39.5%), followed by diuretics(25.12%).⁷ Saju AP *et al.*, conducted a similar study and found that CCBs 140 (70%) are prescribed more, followed by diuretics 88 (44%).⁶

In the present study most of the CKD patients with HTN were treated with Multi drug therapy. This

result was supported by another study conducted by Elhami E *et al* on Drug utilization evaluation of antihypertensive drugs in diabetic patients with CKD and found that (50%) on two drug therapy, 24 (20%) on three drug therapy.¹¹

The medication adherence of the participants and concluded that there was a significant difference between first visit & follow up at 5% level of significance with *P* value 0.000. Burnier M *et al.*, conducted a large survey of quantitative studies on Drug adherence in chronic kidney diseases and dialysis. And the review concluded that because of the complexity of treatment and the high pill burden, CKD patients are at very high risk of poor adherence and should definitively be supported in their efforts to maintain a good persistence.¹²

CONCLUSION

CKD and HTN are chronic diseases which are inter-related to each other and cyclic in nature. HTN is a cause and complication of CKD. The treatment of CKD is done by treating the associated diseases and associated factors. Treatment for HTN will help in the reduction of chances of cardiovascular complications, mortality rate and progression of CKD. Medical records of 120 patients were assessed in this study. The prevalence of CKD with HTN was more in males than in females and half of the patients were smokers. The preferential drugs employed among the patients were CCBs followed by diuretic, beta blockers, alpha blockers, ARBs, centrally acting sympatholytics, mixed alpha beta blockers, vasodilators and ACE-Is. Use of antihypertensives in CKD patients did not deviate from the guidelines laid down by NKF KDOQI guidelines. This study revealed that multi-drug therapy was more preferred than mono-drug therapy. The patients understanding about the disease and the importance of medication could be improved by taking follow up and it was proved by the significant improvement in the medication adherence of patients by follow up. It is concluded that the pharmacist can play a crucial role in the management of chronic disease by improving the medication adherence and by maintaining a rapport relationship between the patients.

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Source of Support: Nil, Conflict of Interest: None.

