



A PROSPECTIVE OBSERVATIONAL STUDY ON MANAGEMENT OF HYPERTENSION IN PATIENTS ON HEMODIALYSIS

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ABSTRACT

Background: Hemodialysis is a common medical disorder. It has significant impact on HRQOL and the value of resources that are expended as a result of on ill health, Hypertension is associated with elevation of arterial BP. The management basically focuses on use of antihypertensives. **Objectives:** To determine and assess management of hypertension in hemodialysis patients. **Methods:** It was a Hospital based observational, prospective study conducted by random selection of patients. Based on the diagnosis the study populations were 70patients with hypertension on hemodialysis. Patients were included in the study after obtaining verbal informed consent. Information was collected about management of diseases, demography, diagnosis, treatment cured by patients was collected. **Results and Discussion:** Among 70 patients with hypertension on hemodialysis 78.5% patients were male and 21.5% were female. The most affected age group was between 36-45. The commonly prescribed drug was calcium channel blockers. The most preferred route of drug was oral.

Key Words:- Hypertension, Hemodialysis, Pre-Hemodialysis blood pressure, Post Hemodialysis blood pressure.

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INTRODUCTION

Hypertension in chronic hemodialysis patients is very common, and associated with cardiovascular morbidity and mortality (Hypertension, 2015). On the other hand, normalization of blood pressure in this patient population results in improvement of survival in the long-term (Hypertension Drug therapy for hypertension in

hemodialysis patients includes mainly angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers, beta-blockers and diuretics, but guidelines for the use of specific classes of antihypertensive medications do not exist for end-stage renal disease (ESRD) patients on maintenance hemodialysis treatment (Mayank M *et al.*, 2015).

Drug therapy for hypertension in hemodialysis (HD) patients includes all classes of antihypertensive drugs, with the sole exception of diuretic (Manual of Hypertension of the European Society of Hypertension). Angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers may decrease morbidity and mortality (Sarah S *et al.*, 2013). Potential risk factors include hyperkalemia, anaphylactoid reaction with AN69 membranes (particularly ACE inhibitors), and aggravation of renal anaemia. Beta-blockers decrease not only mortality, blood pressure (BP), and ventricular arrhythmias, but also improve left ventricular function in ESRD patients. Nonselective beta-blockers can cause an increase in serum potassium (particularly during fasting or exercise) (Wolfgang W *et al.*, 2012). Lisinopril and atenolol have a predominant renal excretion and therefore

a prolonged half life in ESRD patient (Brienne L *et al.*, 2015). Thus thrice-weekly supervised administration of these drugs after HD can enhance BP control. The use of calcium channel blockers is also associated with lower total and cardiovascular-specific mortality in HD patient (Horl WH, 2014). Minoxidil is a very potent vasodilator that is generally reserved for dialysis patients with severe hypertension. The majority of dialysis patients need a combination of several antihypertensive drugs for adequate BP control (Chonchol M *et al.*, 2012).

Hypertension is present in more than 80% of patients with CKD and contributes to progression of kidney disease toward end stage (ESRD) as well as to cardiovascular events such as heart attack and stroke (Marcin T *et al.*, 2016). In fact the risk for cardiovascular death in this patient population is greater than the risk for progression to ESRD (Rajiv A *et al.*, 2017). Proteinuria is an important co-morbidity in hypertensives with CKD and increase risk of disease progression and cardiovascular events (Michael W *et al.*, 2016). Treatment of hypertension is therefore imperative (Rocco MV *et al.*, 2011). The National Kidney Foundation clinical practice guidelines recommend a blood pressure goal of <130 mmHg systolic and <80 mmHg diastolic for all CKD patients. Specifically a mean arterial pressure <92 mmHg (e.g. 120/80 mmHg) as compared to 102-107 mmHg (e.g. 140/90 mmHg) is associated with reduced risk for ESRD (Yusuf S *et al.*, 2000). In most cases achieving this goal requires both non-pharmacologic and pharmacologic intervention. Dietary sodium restriction to no more than 2 grams daily is important (ALLHAT, 2002). In addition, moderate alcohol intake, regular exercise, weight loss in those with a body mass index greater than 25 kg/M and reduced amount of saturated fat help to reduce blood pressure (Kestenbaum B *et al.*, 2002).

After initial dosing with an ACEi, ARB or other drug, a diuretic should be added to the regimen. Thereafter, beta-blockers, calcium channel blockers, alpha blockers and alpha 2 agonists (e.g. clonidine) and finally vasodilators (e.g. minoxidil) should be added to achieve blood pressure goal (Joint National Committee on prevention , 1997). Combinations of ACEi and ARB are helpful in reducing proteinuria and may also lower blood pressure further in some somecases (Conion PJ *et al.*, 1996). Blood pressure should be monitored closely in hypertensive patients with CKD and both clinic and home blood pressure measurements may help the clinician adjust treatment (Klahr S *et al.*, 1994).

Beta-Blockers and calcium channel blockers (CCBs) have been associated with reduced all-cause and cardiovascular

mortality. This study describes the treatment of hypertension and assesses the association between mortality and class of antihypertensive medication among a cohort of dialysis patients (Sarnak M *et al.*, 2005)

OBJECTIVES

- To determine and assess management of hypertension in hemodialysis patients.
- To limit the dietary sodium intake
- To reduce the severity of HTN.

METHODS

70 patients of both sexes above 18 years having symptoms suggestive of chronic kidney disease were confirmed and on hemodialysis with co-morbid conditions and no history of allergy to antihypertensive drug therapies were included into the study after taking an informed consent. Pregnant and Lactating women were excluded from the study.

We have surveyed the status of BP control in 70 hemodialysis patients, 78.5% men and 21.5% women, aged 18-75 years old, selected patients were asked for their symptoms and personal history taken. The following measurements were recorded: predialysis arterial blood pressure, post-dialysis arterial blood pressure , percentage of change in Arterial blood pressure before and after dialysis, pre-dialysis weight, post-dialysis weight, fluid removed by ultrafiltration during each dialysis session.

RESULTS

- In this observational study, the effect of Antihypertensive drug therapies was evaluated and determined in 70 % hemodialysis patients. Among 70% patients 78.5% patients were male and 21.5 % patients were female. The most common age group was between 36-45 years.
- Major presenting complaints were fever with chills,rashes, hypotension, hypoglycemis, chestpain, body pains in patients with HD. On evaluating the cause of Hypertension via BP levels, it was confirmed that all patients had Hypertension.
- On enquiring for addiction in the present population, it was found that majority of them were Ex-smokers 10% followed by Alcoholics 9% respectively.
- Of the total population, among 70 patients, majority had Chronic Kidney Disease with stage-V.
- In our study, all 70 patients with Hypertension positive were treated with calcium channel blockers.

Table1. Classification of the Patients Enrolled in the Study

Sex	Male	Female
No. of Patients(%)	55(78.5%)	15(21.5%)

Table 2. Distribution of Patients Based on the Age Groups

Age (Yrs)	18-25	26-35	36-45	46-55	56-65	66-75
Male	1	6	17	13	14	4
Female	1	2	5	4	2	1

Table 3. Distribution of Patients Based on the Present Complaints

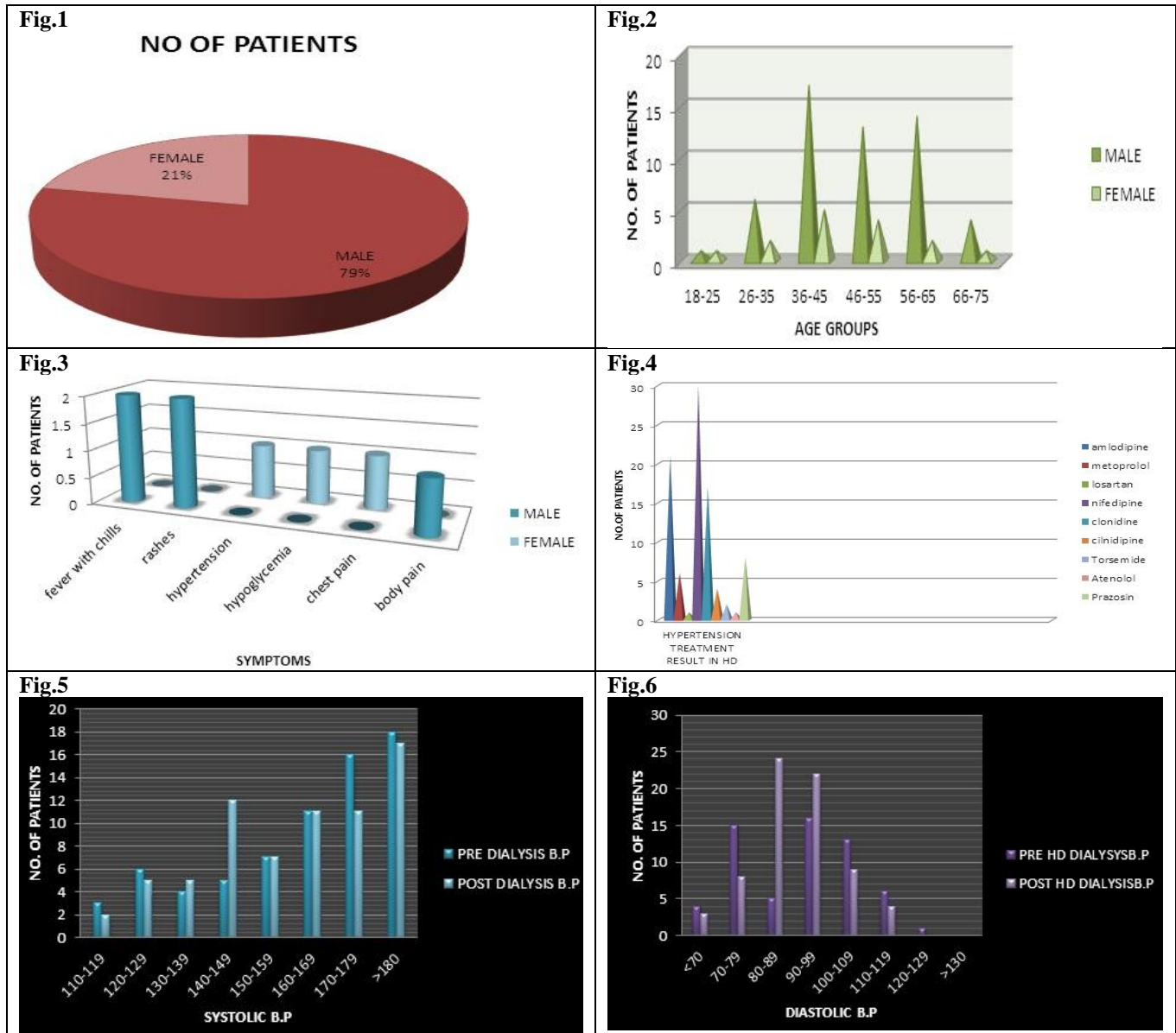
S.No	Symptoms	Sex	No.of Patients
1.	Fever with chills	M	2
		F	0
2.	Rashes	M	2
		F	0
3.	Hypertension	M	0
		F	1
4	Hypoglycemia	M	0
		F	1
5.	Chest pain	M	0
		F	1
6.	Body pain	M	1
		F	0

Table 4. Systolic Blood Pressure In Pre and Post Hemodialysis Patients

Systolic blood pressure	Pre-HD bloodpressure	Post -Hdblood Pressure
110-119	3	2
120-129	6	5
130-139	4	5
140-149	5	12
150-159	7	7
160-169	11	11
170-179	16	11
>180	18	17

Table 5. Diastolic Blood Pressure in Pre and Post Hemodialysis Patients

Diastolic blood pressure	Pre-HD bloodpressure	Post -HDblood pressure
<70	4	3
70-79	15	8
80-89	15	24
90-99	16	22
100-109	13	9
110-119	6	4
120-129	1	0
>130	0	0



CONCLUSION

Our study focused on the effect of Antihypertensive drug therapies (Amlodipine, Metoprolol, Losartan, Nifedipine, Clonidine, Atenolol, Prazosin, Torasemide) in hemodialysis patients.

- In Hypertensive patients with HD both treatment was prescribed and is in accordance to the standard guidelines.
- The treatment focused on lowering Blood Pressure in HD Patients confirmed through validated Automated device on the patients.

- Interestingly, we observed that Hypertension were cured in majority of patients following the treatment with calcium channel blockers, central agonists, alpha1 blockers, beta blockers, angiotensin receptor blocker and diuretics antihypertensive drug therapies.

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Nil

CONFLICT OF INTEREST

No interest

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