

Antihypertensive Prescription Pattern in the Department of Nephrology Khyber Teaching Hospital Peshawar

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ABSTRACT

Objective: To find the prescription pattern of antihypertensive drugs in the department of Nephrology Khyber Teaching Hospital Peshawar

Study Design: Observational / cross sectional study.

Place and Duration of Study: This study was conducted at the outpatient department of nephrology Khyber Teaching Hospital Peshawar from January 2018 to March 2018.

Materials and Methods: 200 patients suffering from hypertension were included in the study. We examined the frequency and proportion of various antihypertensive drugs as mono therapy, combination therapy and fixed drug combinations (FDCs).

Results: Most frequently prescribed antihypertensive drugs were CCBs (65%) followed by diuretics (54%), beta blockers (50.5%), ARBs (26%) and ACEIs (21%) respectively. 57.5% were using two drugs and most commonly used FDCs was diuretics with ACEI.

Conclusion: Calcium channel blockers are mostly prescribed while alpha blockers are the least prescribed antihypertensives drugs.

Key Words: prescription pattern, antihypertensive, calcium channel blocker

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INTRODUCTION

Hypertension is a global health issue affecting both developed and developing countries. The worldwide prevalence calculated in 2000 was 25% and is expected to increase by 30% in 2025.¹ Hypertension is one of the major risk factor for cardiovascular disease (CVD) and chronic kidney disease.^{2,3,4} Hypertension also constitutes high rates of deaths worldwide.⁵ Persistent antihypertensive treatment significantly reduces mortality and morbidity.⁶ Reducing high blood pressure is beneficial in the prevention of CVD and CKD.⁷ Lower BP target is required in high risk patients such as diabetics and renal failure patients compared to those without such co-morbidities.⁸

Similarly, BP lowering strategy is also dealt differently in young and elderly individuals.⁹ Optimal and intensive treatment options are used for achieving targeted blood pressure.^{10,11}

In order to achieve this goal hypertension has to be treated with different pharmacologically available antihypertensive agents like calcium channel blockers (CCB), angiotensin converting enzyme inhibitors (ACEIs), ARBs, Alpha/ beta blockers and diuretics. These drugs are given as mono therapy or combination therapy.^{12,13} The selection of different drugs depend on patient's age and co-morbidities like CKD, diabetes and glomerulonephritis. Drug characteristics including efficacy, side effects and financial burden due to cost of the drugs greatly influence the selection of antihypertensive drugs.¹⁴

MATERIALS AND METHODS

Sample data was collected from the outpatient department of nephrology Peshawar KPK from 1st January 2018 to 31st March 2018. Antihypertensive prescriptions for patients with CKD, diabetes and glomerulonephritis (GN) were included in the study. Mean age was calculated. Antihypertensive drugs were divided into 7 classes depending on their pharmacological characteristics as CCB, beta blockers, alpha blockers, diuretics, ARBs, ACEI, and centrally acting used either alone or in combination or FDCs.

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RESULTS

According to table 1, among 200 patients, 109 (54.5 %) were males and 91 (45.5 %) were females showing prevalence of hypertension is 10% higher in male population compared to female population. Mean age of males and females was 57.4 ± 0.94 and 52.71 ± 0.81 years.

As shown in Table 2, 54.4 % of patients had chronic kidney disease, 26 % had diabetes and 19.5 % were suffering from glomerulonephritis. The most commonly prescribed antihypertensive group of drugs in CKD was CCB (49.5 %), beta blockers (46.5 %), diuretics (27%) followed by ARB (9.5%) and ACEI (7%) respectively. In diabetic patients most commonly used antihypertensive was ARB (13%) followed by ACEI (10%). In glomerulonephritis, diuretics use was 19.5% followed by CCB (12%) (table 3). Table no 4 shows

most frequently prescribed antihypertensive was CCB (65%) followed by diuretics (54%), beta blocker (50.5%), ARBs (26%) and ACEI (21%) respectively.

Table No.1: Demographic Profile of Patients

Gender	Number (n=200)	Percentage
Male	109	54.5%
Female	91	45.5%

Table No.2: Co Morbidities of the Patients.

Co Morbidity	Male	Female	Total	%age
Chronic Kidney Disease	72	37	109	54.5%
Diabetes	33	19	52	26%
Glomerulonephritis	20	19	39	19.5%

Table No.3: Treatment of Hypertension With Co Morbidities

Co morbidity	Calcium channel blocker	Beta blocker	Arb	Ace	Alpha blocker	Diuretics	Centrally Acting
Chronic Kidney Disease	49.5%	46.5%	9.5%	7%	1%	27%	1.5%
Diabetes	3.5%	4%	13%	10%	0%	7.5%	0%
Glomerulonephritis	12%	0%	3.5%	4%	0%	19.5%	0%

Table No.4: Frequency of Administration Of Individual Drugs

Antihypertensive group	Antihypertensive group	Number of prescriptions
Calcium Channel Blocker (65 %)	Nifedipine	109
	Amlodipine	21
Diuretics (54 %)	Furosemide	93
	Hydrochlorothiazide	23
	Spironolactone	15
	Metolazone	06
Beta Blocker (50.5%)	Carvedilol	83
	Atenolol	18
ARB (26%)	Valsartan	32
	Losartan	20
ACE (21%)	Enalapril	30
	Ramipril	12
Centrally Acting (1.5%)	Methyldopa	3
Alpha Blocker	Prazosin	2

Table No.5: Numbers of Drugs Prescribed

Number of Anti-Hypertensive Drugs	Number of Prescriptions	Percentage
One Drug	26	13%
Two Drugs	115	57.5%
Three Drugs	54	27%
Four or more Drugs	5	2.5%

Table No.6: Frequency Of Prescribing Fdc

FDC	Number of Prescriptions
Diuretics with ACE	60
Diuretics with ARB	57
ACE/ ARB/ CCB	27
Diuretics in combination	11
Three drugs FDC	7

Twenty-six patients (13%) were using one antihypertensive drug, 57.5% were on two drugs, 27% had three drugs and 5 patients (2.5%) were using four or more drugs (table 5).

Table no 6 shows frequency of fixed drug combination. Sixty prescriptions had combination of diuretics with ACEI while only seven prescriptions were of 3 drugs fixed drug combination.

DISCUSSION

Hypertension is a serious health problem and is of great concern worldwide. According to the National Health survey 18% of adult population are affected by hypertension and the prevalence is increased to 33% in adults above 45 years of age.¹⁵ Multiple factors including genetic predisposition, sedentary life style, lack of exercise, and lack of healthy diet awareness have been identified as major causes of hypertension in Pakistani population. ¹⁶In order to control hypertension effectively, strict compliance and correct prescription of quality antihypertensive drugs is very important. Since these drugs are prescribed for lifelong, the cost of such

drugs is also very important factor as the prices are growing faster and can affect the financial budget of a family and indirectly affecting compliance of the patient.¹⁷ According to JNC VIII guidelines, initial drug of choice for hypertension is ACEI, ARB, thiazide diuretics and CCB.¹⁸ The same is true for diabetics who are non-black. In blacks it is suggested to start with thiazide diuretic or CCB alone or in combination. For CKD patients it advocates ACEI / ARB alone or with other class. In our study in diabetic patients ARB (13%) followed by ACEI (10%) were most commonly used antihypertensives in line with JNC VIII guidelines. In CKD groups of patients prescription rate of CCB and beta blocker were (49.5%) and (46.5%) respectively. Only (9.5%) were using ARB and (7%) were on ACEI. This is in contrast to JNC VIII guidelines. Patients with advanced renal failure are more likely to develop hyperkalemia if there is interference with the excretion of potassium. Hyperkalemia is a life-threatening condition which can cause arrhythmia and sudden death. Kovesdy CP has reported that around 40% - 50% of patients with CKD have hyperkalemia.¹⁹ There is no difference between ACEI and ARBs in development of hyperkalemia in CKD.²⁰ To continue ACEI or ARBs in patients who are at high risk of hyperkalemia such as CKD patients, their potassium levels should be closely monitored, NSAIDs should be avoided and metabolic acidosis should be promptly treated.²¹ In our setup there is no proper follow up of the patients due to different reasons therefore, we usually avoid using ACEI or ARBs in CKD patients. Lee JH et al has also advocated to stop or reduce ACEI or ARBs despite their beneficial effect on renal functions.²² In our study more than half of the patients received two drugs for the treatment of hypertension. JNC VIII hypertension guidelines also advocate combination of antihypertensive to achieve target blood pressure.¹⁸ To improve the blood pressure control and compliance large number of patients used fixed drug combination. Most commonly used FDC was diuretics with ACEI followed by diuretics with ARBs and drugs acting on renin angiotensin system (RAS) with CCB. Only seven prescriptions included three drugs in the form of FDC. The advantage of using FDC is that the combination drugs negate the side effects of each other. Combination of ARB / ACEI with diuretics, the potassium loss produced by diuretics is taken care by potassium conservation of RAS inhibitors.

CONCLUSION

The current study shows prescribing trends and rationale for the use of antihypertensive drugs. The study will work as a baseline for further research in future. There is a need to collect data about antihypertensive therapy used in our community so as to define treatment strategy and update suitable recommendations regarding treatment to generate

guidelines for patients of different age groups and gender suffering from high blood pressure associated with co-morbidities like CKD, diabetes and glomerulonephritis.

Author's Contribution:

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