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PATTERN OF ANTIHYPERTENSIVE THERAPY AMONG DIABETIC HYPERTENSIVES

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ABSTRACT

Background: Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently. The incidence of hypertension in patients with T2DM is approximately two-fold higher than in age-matched subjects without the disease which increases macro and micro vascular complications and 7.2 fold rise in mortality. This study attempts to analyse the use of evidence based medicine in a tertiary care hospital. **Objective:** 1.To evaluate antihypertensive usage in patients with coexisting T2DM (type 2 diabetes) and compare with recent JNC 8 guidelines. **Material & methods:** A prospective observational study was conducted in RajaRajeaswari Medical College & Hospital from August 2014 to january 2015. A total of 150 cases with coexisting diabetes and hypertension were analysed. Relevant information was recorded in a structured proforma & data was evaluated. **Results:** In the present study 68% of the patients were in the age group 55-70yrs with male preponderance Among diabetic hypertensives, 38.67% of patients were treated with single anti-hypertensive drug and 61.33% of patients were treated with anti-hypertensive drug combinations. In monotherapy, Angiotensin Receptor Blockers(telmisartan) was most commonly prescribed. In combination therapy, calcium channel blockers (amlodipine) and Angiotensin Receptor Blockers(telmisartan) followed by calcium channel blockers (amlodipine) and beta blocker (atenolol) were used. In uncontrolled cases 3 drugs were used, calcium channel blockers (amlodipine), Angiotensin Receptor Blockers (telmisartan) and thiazide diuretics (hydrochlorthiazide). **Conclusion:** In our study antihypertensive polytherapy CCB's+ARB's was most commonly prescribed which was in accordance with JNC 8 report.

KEYWORDS: Antihypertensive agents, Diabetes, Hypertension, Evidence based medicine.

INTRODUCTION

Hypertension (HTN) and Diabetes Mellitus (DM) are the 2 major chronic diseases frequently coexisting, with increased incidence with age. HTN is about twice as common in patients with DM than in those without (8%).[1]

The number of people with diabetes in India currently around 62 million, is expected to rise to 79.4 million by 2030[2,3]

HTN substantially increases the risk of both macrovascular and microvascular complications including stroke, coronary artery disease, peripheral vascular disease, retinopathy, nephropathy and neuropathy.[4]

The progressive decline in glomerular function that is seen in diabetic patients with hypertension, especially those with albuminuria can be slowed with antihypertensive treatment.

Appropriate use of anti-hypertensive agents control Blood Pressure (BP) and reduce complications in patients with diabetes. Evidence also supports the need for using multiple anti-hypertensive agents rather than monotherapy to achieve target BP and greater renoprotection.[5]

As per The Joint National Committee (JNC) 8th report which is an Evidence-Based Guideline for the Management of High Blood Pressure in Adults, blood pressure goal for all ages diabetics with no chronic kidney disease is <140/90mmHg and the treatment is initiated with Thiazide- type diuretics or ACEI or ARB or CCB, alone or in combination.[6] Figure:1

This study aims at observing the pattern of utilization of different groups of antihypertensives in patients with type 2 diabetes in a tertiary care hospital, reviewing the pharmacological basis for the current guidelines and correlating the data obtained from the study to these guidelines.

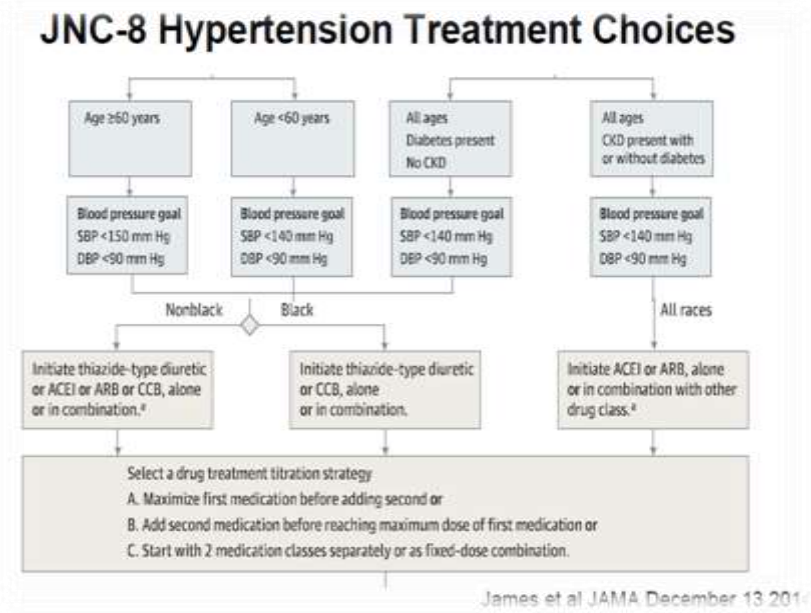


Figure 1: The Joint National Committee (JNC) 8th report, an Evidence-Based Guideline for the Management of High Blood Pressure in Adults

AIMS AND OBJECTIVES

1.To evaluate prescribing pattern of antihypertensive drugs in T2DM (type 2 diabetes) patients and compare with recent JNC 8 report.

MATERIALS AND METHODS

A prospective observational study was conducted in the outpatient department of General Medicine at Rajarajeswari Medical College and Hospital, Bangalore for 6 months(Aug 2014-Jan 2015) after Institutional Ethics Committee approval.

A total of 150 prescriptions with coexisting diabetes and hypertension were analysed with following inclusion and exclusion criteria:

Inclusion Criteria

1. Patients with type-2 diabetes mellitus and coexisting hypertension
2. Patient who gives informed consent.
3. Patients of 40-70 yrs age group

Exclusion Criteria

1. Patients with type-1 diabetes mellitus.
2. Patients who do not give informed consent

3. Patients aged less than 40 yrs and more than 70 yrs.
4. Gestational diabetes mellitus.
5. Acute complications like diabetic ketoacidosis and infection

The results obtained were analysed under following characteristics;

Patient characteristics: Gender and Age distribution

Drug characteristics: No. of antihypertensives used as monotherapy and polytherapy, classwise distribution of antihypertensives, antidiabetics and other co prescribed drugs

Statistical analysis- Results were analysed using descriptive statistics expressed as percentages and mean.

RESULTS

Out of 150 cases, 55-70yrs age group comprised 68% with male prepondarance (64.67 %)

Table 1: Age Distribution

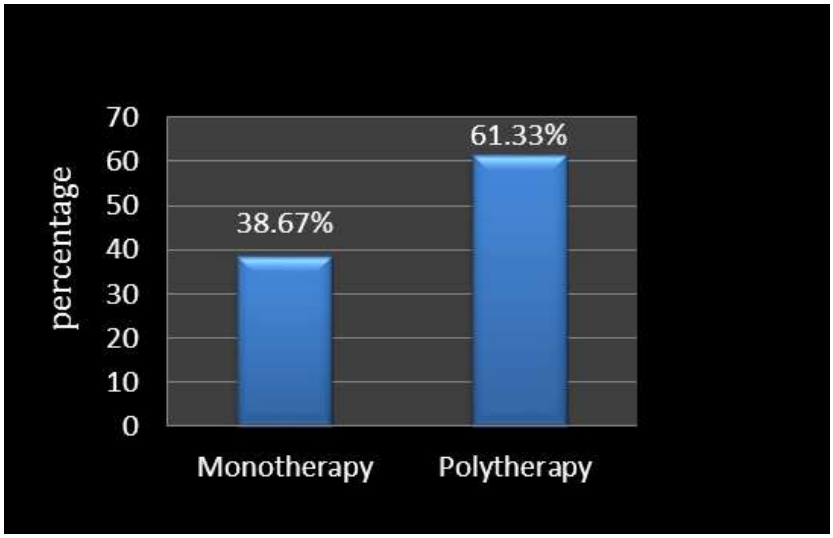
Characteristics Age (years)	Number of prescriptions	%
40-55	48	32
55-70	102	68

Table 2: Gender Distribution

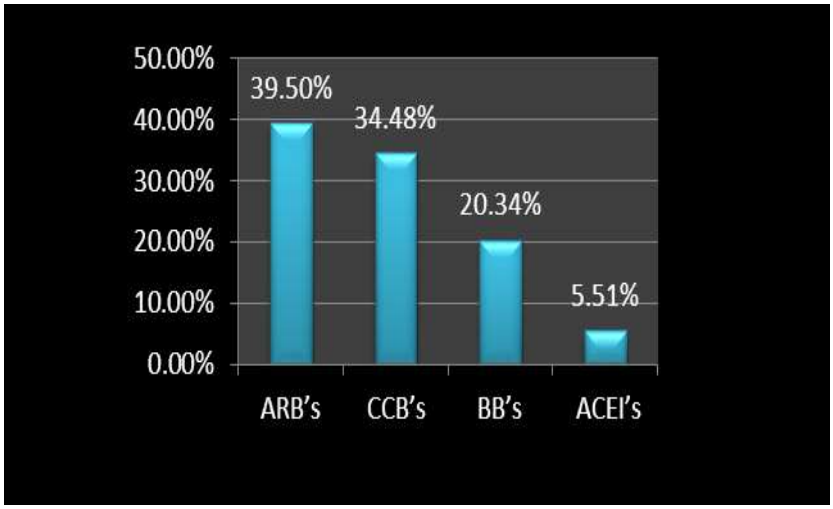
Characteristics Gender	Number of prescriptions	%
Males	97	64.67
Females	53	35.33

Table 3: Classwise distribution of drugs in monotherapy and combination therapy

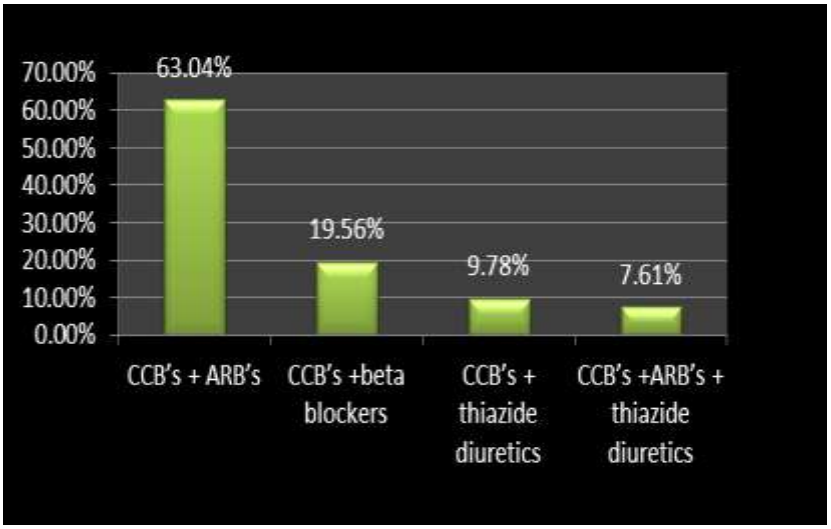
Drug therapy	Drugs	% distribution
Monotherapy	Angiotensin Receptor Blockers[ARB's]	39.50%
	Calcium Channel Blockers [CCB's]	34.48 %
	Cardioselective Betablockers[BB's]	20.34%
	Angiotensin Converting Enzyme Inhibitors [ACEI's]	5.51%
Polytherapy	CCB's + ARB's	63.04%
	CCB's +beta blockers	19.56%
	CCB's + thiazide diuretics	9.78%
	CCB's +ARB's + thiazide diuretics	7.61%



Graph 1: Patterns of Antihypertensive therapy



Graph 2: Classwise distribution of Antihypertensive drugs in monotherapy



Graph 3: Classwise distribution of Antihypertensive drugs in polytherapy

Table 4: Antidiabetic drugs used

Drug class	% distribution
Glimepiride + Metformin	52%(78)
Glimepiride + Metformin + Vildagliptin	12%(18)
Metformin + Voglibose	8%(12)
Sitagliptin + Metformin	4%(6)
Insulin	24%(36)

Table 5: Other drugs used are

Drug class	% distribution
Antiplatelets	78%(117)
Statins	64%(96)
Pregabalin + Methylcobalamin	46% (69)
Multivitamins, Folic acid, Iron	32%(48)
Proton pump inhibitors	28(42)
Nitrates	18%(27)
Calcium	10 (8.8)

DISCUSSION

In our study hypertension with diabetes was more prevalent in males than in females. In general, prevalence of hypertension increases as the age advances. [7] In the present study, it was observed that 68% of patients were between 55-70 years of age.

In our study antihypertensive combination therapy (61.33%) was commonly used than monotherapy (38.67%) which correlates with earlier studies by Hansson.L *et al*.[8]

Amongst Monotherapy ARB'S [Telmisartan] (39.50%)was frequently prescribed followed by CCB'S [Amlodipine] (34.48 %)

Telmisartan improves glucose metabolism in hypertensive patients with the metabolic syndrome in addition to its anti-hypertensive effect. This effect may depend, at least in part, on specific peroxisome proliferator-activated receptor gamma agonism by telmisartan.[9]

Amlodipine also affords cardioprotection by reducing oxidative stress induced in experimental myocardial infarction through prevention of free radical mediated injury of catecholamine assault.[10] Amlodipine had the most potent antioxidant activity as a result of distinct biophysical interactions with the membrane lipid bilayer.[11]

In Polytherapy ARB'S + CCB'S (63.04%) were commonly prescribed which was similar to the previous study by Limaye R.P *et al.*[12]

Overall antihypertensive usage was in accordance with Evidence based JNC-8 criteria.

Furthermore, the most prescribed oral hypoglycaemic agent was combination of the Metformin and Glimepiride. This is in agreement with the report of Pooja *et al*. [13]

Low dose Aspirin is found to be effective in reducing cardiovascular complications in diabetic hypertensive as it has antiplatelet properties. In the present study, it was observed that 78% of them were prescribed with low dose aspirin.

The time course over which statins provide prevention against death appears to be long, of the order of one year, which is much longer than the duration of their effect on lipids, a hypothesis put forth by Borghiet.al 2007.[14] In the present study 64% cases were prescribed with statins.

Other drugs used are Pregabalin + Methylcobalamin (46%), to prevent diabetic neuropathy, Multivitamins (32%), PPI',Nitrates & Calcium.

CONCLUSION

In our study antihypertensive polytherapy CCB's+ARB's was most commonly prescribed which was in accordance with JNC 8 report.

Further follow up studies are required to establish the effectiveness of Recent JNC 8 report in achieving the target Blood pressure in type 2 diabetics.

The principal limitation of the study was that it was collected from the outpatient and thus not be representative of prescription patterns across the state.

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