

COMPARATIVE STUDY ON EFFICACY OF COMBINATION THERAPY WITH TELMISARTAN PLUS AMLODIPINE IN POORLY CONTROLLED HYPERTENSION

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Abstract : Coronary artery disease, stroke, and peripheral artery disease involve atherosclerosis. This may be caused by high blood pressure, smoking, diabetes mellitus, lack of exercise, obesity, high blood cholesterol, poor diet, and excessive alcohol consumption, among others. The study was to evaluate the efficacy and safety combination therapy with telmisartan plus amlodipine in patients with poorly controlled hypertension. CVD includes coronary artery diseases (CAD) such as angina and myocardial infarction (commonly known as a heart attack). All the patients admitted in the department of General medicine and attending outpatient department of General medicine, Hyderabad during the period of January 2020 to August 2020, who are fitting into the inclusion criteria were included in the study. Inclusion criteria included age 20 years or older and had BMI in above normal range a positive diagnosis of Hypertensive disease included in the study. Exclusion criteria included Patients with diabetes mellitus, Patients with allergy, Gestational diabetes mellitus, Patients on long term steroids, daily use of oral corticosteroids or antimicrobial drugs, diabetes mellitus, alcoholism, history of pulmonary surgery or tuberculosis, severe bronchiectasis, or a psychiatric history and pregnancies. We investigated whether combination therapy with telmisartan and amlodipine was more effective in reducing central aortic pressures. Men and women aged ≥ 25 years with mild-to-moderate hypertension, defined as mean seated cuff SBP 140–179 mm Hg and/or diastolic BP (DBP) 95–109 mm Hg were randomized. All 110 patients were participated in this study, and the response was 100%. The evaluate of efficacy and safety combination therapy with telmisartan plus amlodipine in patients with poorly controlled hypertension. The BP control is often difficult to maintain, and BP level is not adequately controlled in more than 50% of hypertensive patients on single-drug therapy. The blood pressure (BP) level is one of the major determinants of cardiovascular morbidity and mortality in individuals. The combination therapy with telmisartan plus amlodipine may be more beneficial treatment for controlling brachial and BP, which could lead to more favorable cardiovascular outcomes with this drug combinations. We concluded that combination therapy with telmisartan plus amlodipine may be more beneficial treatment for controlling BP, which could lead to more favorable cardiovascular outcomes with this drug combinations. This combination therapy reduces the major risk factors of cardiovascular disease. It also prevents the future cardiovascular events in individuals.

KEY WORDS: Hypertension, S-amlodipine, telmisartan, single-pill combination, blood pressure, fixed-dose combinations.

I. INTRODUCTION

Hypertension is defined as blood pressure above 140/90, and is considered severe if the pressure is above 180/120. High blood pressure often has no symptoms. Over time, if untreated, it can cause health conditions, such as heart disease and stroke. High blood pressure (hypertension) also called as HBP, a condition in which the force of the blood against the artery walls is too high. High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease. Eating a healthier diet with less salt, exercising regularly and taking medication can help lower blood pressure. Most people with high blood pressure have no signs or symptoms, even if blood pressure readings reach dangerously high levels. A few people with high blood pressure may have headaches, shortness of breath or nosebleeds, but these signs and symptoms aren't specific and usually don't occur until high blood pressure has reached a severe or life-threatening stage. For most adults, there's no identifiable cause of high blood pressure. This type of high blood pressure, called primary (essential) hypertension, tends to develop gradually over many years. Some people have high blood pressure caused by an underlying condition. This type of high blood pressure, called secondary hypertension, tends to appear suddenly and cause higher blood pressure than does primary hypertension. Various conditions and medications can lead to secondary hypertension, including: The excessive pressure on your artery walls caused by high blood pressure can damage your blood vessels, as well as organs in your body. The higher your blood pressure and the longer it goes uncontrolled, the greater the damage. Uncontrolled high blood pressure can lead to complications including, Heart attack or stroke: High blood pressure can cause hardening and thickening of the arteries (atherosclerosis), which can lead to

a heart attack, stroke or other complications. Changing your lifestyle can go a long way toward controlling high blood pressure. Your doctor may recommend you make lifestyle changes including, Eating a heart-healthy diet with less salt, Getting regular physical activity, Maintaining a healthy weight or losing weight if you're overweight or obese. Risk factors include High blood pressure has many risk factors, including Age, Race, Family history, Being overweight or obese Not being physically active Using tobacco.

Complications include the excessive pressure on your artery walls caused by high blood pressure can damage your blood vessels, as well as organs in your body. The higher your blood pressure and the longer it goes uncontrolled, the greater the damage. Uncontrolled high blood pressure can lead to complications including: Heart attack or stroke Aneurysm Heart failure Weakened and narrowed blood vessels in your kidneys Thickened narrowed or torn blood vessels in the eyes.

Treatment include Changing your lifestyle can go a long way toward controlling high blood pressure. Your doctor may recommend you make lifestyle changes including:

- Eating a heart-healthy diet with less salt
- Getting regular physical activity

Angiotensin-converting enzyme (ACE) inhibitors. These medications such as lisinopril (Zestril), benazepril (Lotensin), captopril (Capoten) and others help relax blood vessels by blocking the formation of a natural chemical that narrows blood vessels. People with chronic kidney disease may benefit from having an ACE inhibitor as one of their medications.

Thiazide diuretics. Diuretics, sometimes called water pills, are medications that act on your kidneys to help your body eliminate sodium and water, reducing blood volume. Angiotensin II receptor blockers (ARBs). These medications help relax blood vessels by blocking the action, not the formation, of a natural chemical that narrows blood vessels. ARBs include candesartan (Atacand), losartan (Cozaar) and others

AIMS AND OBJECTIVES

To determine the combination therapy benefits of with telmisartan plus amlodipine in hypertension. The objective of this study was to evaluate the efficacy and safety combination therapy with telmisartan plus amlodipine in patients with poorly controlled hypertension.

II.MATERIALS AND METHODS

This is Descriptive Observational study. All the patients admitted in the department of General medicine and attending outpatient department of General medicine, Hyderabad during the period of January 2020 to August 2020, who are fitting into the inclusion criteria were included in the study. Inclusion criteria included age 20 years or older and had BMI in above normal range a positive diagnosis of Hypertensive disease included in the study. Exclusion criteria included Patients with diabetes mellitus, Patients with allergy, Gestational diabetes mellitus, Patients on long term steroids ,daily use of oral corticosteroids or antimicrobial drugs, diabetes mellitus, alcoholism, history of pulmonary surgery or tuberculosis, severe bronchiectasis, or a psychiatric history and pregnancies. The study was approved by the medical ethics committee of the University Hospital of Om Sai Hospital, Hyderabad and all patients gave informed consent. Written informed consent was obtained from patients. We collected data on demographics, risk factors, diagnosis modalities, imaging findings and Hypertensive characteristics were collected at the time of admission, who are fitting into the inclusion criteria were included in the study. ARBs are now a more popular RAS inhibitor. CCBs and ARBs are one of the recommended combinations in order to achieve target BP level. Telmisartan candesartan and Valsartan are effective and well-tolerated ARBs, and their usual dosages 8 mg, 40 mg, 80 mg, once daily, respectively. Therefore, we examined in hypertensive patients whose BP level was uncontrolled by combination treatment. We investigated whether combination therapy with telmisartan and amlodipine was more effective in reducing central aortic pressures. Men and women aged ≥ 25 years with mild-to-moderate hypertension, defined as mean seated cuff SBP 140–179 mm Hg and/or diastolic BP (DBP) 95–109 mm Hg were randomized. Patients were also required to have 24-hour mean ambulatory SBP ≥ 130 mm Hg and/or DBP ≥ 85 mm Hg. Patients were excluded from randomization if they had mean seated SBP ≥ 180 mm Hg or mean seated DBP ≥ 110 mm Hg. Premenopausal women who were nursing, pregnant or not using adequate contraception were excluded. Our present study suggests that combination therapy with telmisartan plus amlodipine may be more beneficial. In addition, patients with a history of coronary disease, congestive heart failure, or a recent acute cardiovascular event (previous 3 months) or stroke (previous 6 months) were excluded, as were those with secondary hypertension. Patients were not eligible for randomization if they had hepatic or renal impairment. In addition,

medications known to affect BP were not allowed. Patients were instructed to take study medication once daily in the morning with water (and consistently with or without food) at approximately the same time each day.

INCLUSION CRITERIA

Included age 20 years or older and had BMI in above normal range a positive diagnosis of Hypertensive disease included in the study.

EXCLUSION CRITERIA

Included Patients with diabetes mellitus, Patients with allergy, Gestational diabetes mellitus, Patients on long term steroids ,daily use of oral corticosteroids or antimicrobial drugs, diabetes mellitus, alcoholism, history of pulmonary surgery or tuberculosis, severe bronchiectasis, or a psychiatric history and pregnancies.

STATISTICAL ANALYSIS

Percentages and frequencies were calculated for categorical while mean and SD for numerical data. SPSS 16 was used to analyze data. Statistical analyses were performed and categories was examined by using chi-square tests for categorical variables and ANOVA for continuous variables. Chi square test was applied. P value <0.05 was labelled significant. Safety data was summarized using descriptive statistics. These included adverse events and deaths.

III.RESULT

A total of 130 patients were enrolled as per inclusion and exclusion criteria, All together 110 patients were participated in this study, and the response was 100%. Table 1 shows the participants were divided into 4 groups by age: 25-35years (n=38, 34.5%), 36-45years (n=35, 31.8%), 46-55 years (n=22, 20.01%), 56-65years (n=15, 13.6%) The majority of patients in the age group between 25-35years (n=38, 34.5%).

TABLE 1

Age wise distribution of patients

N= 110	No.of Patients	Percentage
25-35	38	34.5%
36-45	35	31.8%
46-55	22	20.1%
56-65	15	13.6%

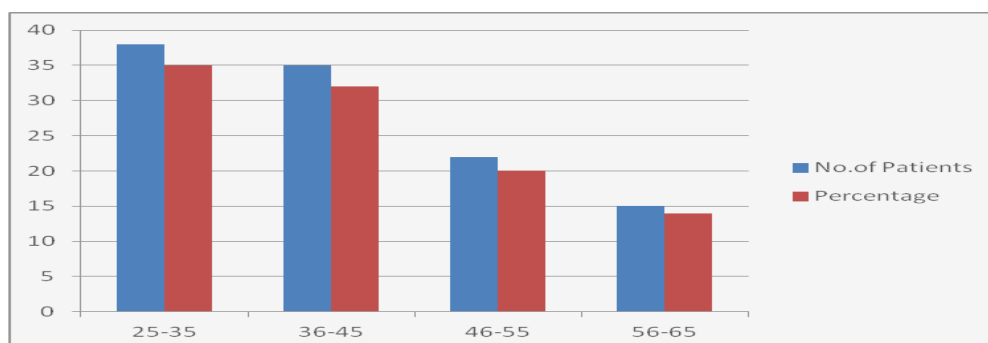


Table 2

The diagnosis of hypertension in the study subjects was based on the following clinical symptoms history of Chest pain 32 (29.0 %) (in 100% of subjects), shortness of breath (25%), weakness (20%), Irregular heartbeat (14.5%), and Headache (10.9%) at the first day of pharmacokinetic assessment .

symptoms	No. patients (%)
Chest pain	32 (29.0 %)
SOB	28 (25.4%)
weakness	22 (20.0%)
Irregular heart beat	16 (14.5%)
Headache	12 (10.9%)

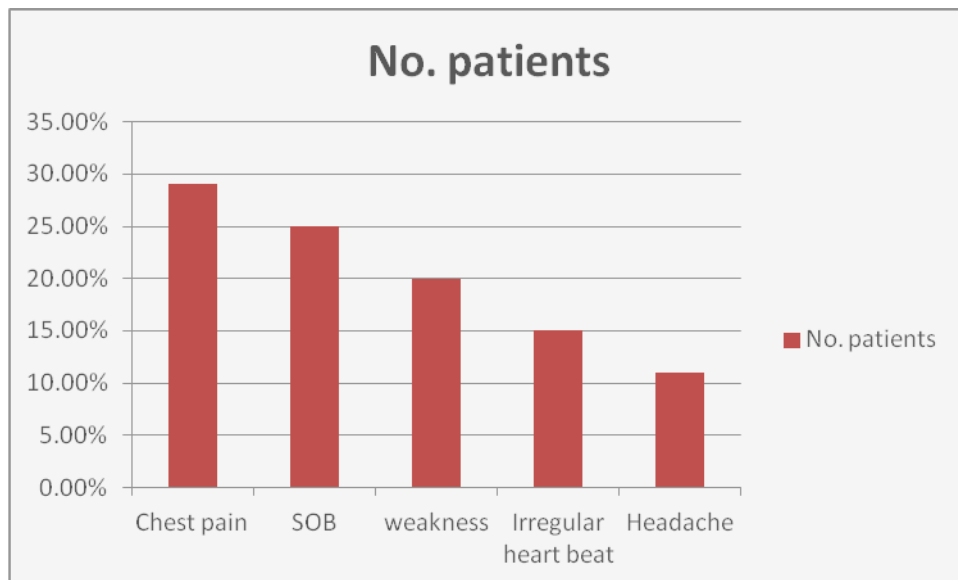
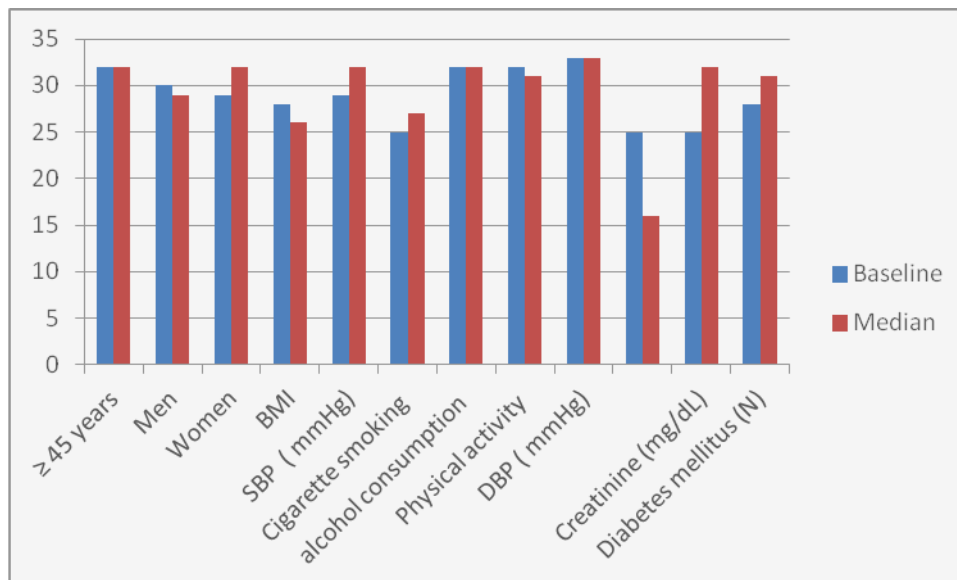
**TABLE 3**

Table 3 shows the participants were divided based upon demographic and clinical characteristics. We have estimated the average value of characteristics of each patient of hypertension group. Information obtained on sociodemographic parameters, BMI, Systolic & Diastolic blood pressure (mm Hg), physical activity, dietary patterns, Cigarette smoking, alcohol consumption and habits of the study population is shown in [Table 3](#).

There was significant difference in average age between women (29 ± 6.0 years) and men (30.36 ± 4 years). These differences were statistically significant. The mean SBP and DBP in women/men were $29.3 \pm 7.3/33 \pm 5$ mmHg, respectively. There were no significant differences SBP and DBP. Mean BP reductions in the last 5 hours were not significantly affected by age group (≥ 45 years) or race. Women had significantly greater BP reductions than men. In addition, during the morning, daytime and night-time periods, patients receiving amlodipine and telmisartan had significantly greater reductions in mean ambulatory SBP and DBP.

Patient demographics and baseline characteristics of randomized patients

VARIABLES	Baseline	Median
Age(Mean \pm SD)		
≥ 45 years	32 ± 4	32
Men	30.3 ± 3.2	29
Women	29 ± 6.0	32
BMI	27.6 ± 2.8	26
SBP (mmHg)	29.3 ± 7.3	32
Cigarette smoking	25.3 ± 3.7	27
alcohol consumption	32.3 ± 4.5	32
Physical activity	32 ± 4.5	31
DBP (mmHg)	33 ± 5	33
Fasting plasma glucose (mg/dL)	25.3 ± 19.7	16
Creatinine (mg/dL)	25.3 ± 19.7	32
Diabetes mellitus (N)	28 ± 15.3	31



IV.DISCUSSION

Blood pressure (BP) control significantly reduces the risk of cardiovascular events in patients with hypertension. Our present study suggests that combination therapy with telmisartan plus amlodipine may be more beneficial. The evaluate of efficacy and safety combination therapy with telmisartan plus amlodipine in patients with poorly controlled hypertension. The BP control is often difficult to maintain, and BP level is not adequately controlled in more than 50% of hypertensive patients on single-drug therapy. The blood pressure (BP) level is one of the major determinants of cardiovascular morbidity and mortality in individuals. Hypertension is one of the major risk factors of cardiovascular disease, and to control BP level appropriately is a therapeutic target for preventing future cardiovascular events in individuals. Therefore, current guidelines recommend combinations of drugs with different mode of actions for treatment of patients with moderate hypertension. BP level was significantly decreased at 4 weeks after the telmisartan treatment and remained low during the study periods. The combination therapy with ARBs and amlodipine, one of the most popular CCBs is effective for BP control compared with high-dose monotherapy, although what types of ARBs in combination with amlodipine are more effective for achieving appropriate BP control is not well established. There are accumulating evidence that BP is closely associated with coronary risk factors and future cardiovascular events in patients with hypertension. The combination therapy with telmisartan plus amlodipine may be more beneficial treatment for controlling brachial and BP, which could lead to more favorable cardiovascular outcomes with this drug combination. We have previously found that telmisartan has the strongest binding affinity to Ang II type 1 receptor. Among the ARBs, telmisartan is the most lipophilic compound as well.²² Therefore, due to its strongest Ang II type1 receptor antagonistic ability, longest half-life and lipophilicity, switching to telmisartan may have long-lasting BP lowering effects in our uncontrolled hypertensive patients.

V.CONCLUSION

We concluded that combination therapy with telmisartan plus amlodipine may be more beneficial treatment for controlling BP, which could lead to more favorable cardiovascular outcomes with this drug combinations. This combination therapy reduces the major risk factors of cardiovascular disease. It also prevents the future cardiovascular events in individuals.

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