Original Reserach Article

Comparative Study of Ramipril and Telmisartan on reduction of raised Systolic blood pressure in patients

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Abstract

Hypertension is a major risk factor for cardiovascular morbidity and mortality. Antihypertensive drug is used to reduce blood pressure In addition, angiotensin receptor blocker has shown beneficial effect for controlling target organ damage. Study was carried outf or production of hypertension by psychogenic stress method, In present work done by me antihypertensive effect of Ramipril and telmisartan was compared with control and with each other's student t-test was done to compare result. It was found that blood pressure varied significantly across the three groups(P=.000).Compared to control group blood pressure was significantly less in both Ramipril and telmisartan (P=.000).Reduction of blood pressure with Ramipril was less than with telmisartan at the end of work. Telmisartan is more efficacious than ramipril as far as blood pressure reduction is concerned.

Keywords : Ramipril, Telmisartan, Antihypertensive effect.

Introduction

Hypertension is a very common abnormality in human[1].It is recognized as a risk factor for cardiovascular morbidity and mortality. Essential feature of hypertensive heart disease is left ventricular hypertrophy[2].Microscopically the cadiacmyocytes are enlarged and contain large, hyperchromatic. box-car shaped nuclei. The main organs (endorgans) that suffer the ravages of high blood pressure are the heart, brain, kidney, and blood vessels[3].Telmisartan does not produce any active metabolite. It is excreted unchanged bile. Dose reduction is required in liver disease[4].ARBs are usefully combined with diuretics for the treatment of hypertension[5].Hypertension is a series Condition. Hypertension is an important risk factor for cardiovascular diseases and stroke and is associated with metabolic syndromes including insulin resistance and lipid abnormalities. At a defining cut of 140/90 mmHg, 28-44% of world population has hypertension. The life time risk for developing hypertension is estimated to be up to 90%. It's a condition, the blood pressure is elevated to an extend ; where clinical benefit can be obtained from blood pressure lowering. Components used for determination was systolic blood pressure. The blood pressure is a product of cardiac output and the total resistance of peripheral system, of that high blood pressure arises as a result of increased resistance of peripheral system due to constriction of small arteries In natural limit it is not harmful. But with this pressure increase., heart is over worked and an abnormal interior tissue growth can be developed in arteries. This cause further blocked in passage of blood, leading to blood pressure increasing.

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In many patients genetic susceptibility to hypertension is observed. Essential hypertension occurs four times more frequently in blacks than whites. And in middle aged population males are more frequent with hypertension than the female.

Many drugs which are commonly used can cause high blood pressure as side effect. Some of the drugs belong to the above category includes non-steroidal anti-inflammatory drugs, contraceptives, steroids. Obesity cause high blood pressure due to increased body weight and additional pressure that it exerts on the heart and arterial system. An unhealthy diet which is rich salt and fats lack of dietary fibers along with a secondary life style devoid of proper exercise, excessive use of alcohol , cigarette smoking is an another culprit for hypertension.

More than 90% of the patients having essential hypertension, it is a disorder of unknown origins effect the BP regulating mechanism. A subject with family history of hypertension is likelihood to develop hypertensive disease. Primary hypertension is four time more frequently in blacks than in whites. Likely it observed more often in middle aged male subjects than middle aged females. Many environmental factors like stressful life style, un-healthy diet, obesity, smoking and alcoholism, lack of proper exercise and usage of drugs such as NSAID are predisposing factors to develop hypertension".

90-95% of hypertension is essential is essential hypertension and 5-10% of hypertension belong to secondary hypertension. Causes of primary hypertension are not clearly unknown. Secondary hypertension is renal or endocrine diseases, vascular diseases. And the same may be arising due to the drugs.Endocrine diseases which can produce secondary hypertension are Acromegaly,Conn's syndrome, cushing 's syndrome, phaeochromocytoma, preeclampsia. Vascular cause includes fibro muscular hyperplasia, renal artery atheroma etc. many drugs can also be leading factor for secondary hypertension. Adrenal steroids, antidepressants, NSAIDs, Oral contraceptive, Sympathomimetics are there in the category of drugs

which can induce hypertension.The ACE inhibitors are first choice drugs in all grades of essential as well as renovascular hypertension. The ACE facilitates production of angiotensin II, which has a major role in regulating arterial BP. The major site for angiotensin II production is the blood vessels. ACE inhibitors block the conversion of angiotensin I to angiotensin II, a potent vasoconstrictor and stimulator of aldosterone secretion[6].ACE inhibitors dilate blood vessels to improve the amount of blood heart pumps and lower blood pressure. ACE inhibitors also increase blood flow, which helps to decrease the amount of work heart has to do and can help protect the kidneys from the effects of hypertension. ACE inhibitors are used in many indication including high blood pressure, heart failure, heart attack, and preventing kidney damage associated with high blood pressure and diabetes. ARBs produce blood pressure reduction by antagonizing the effects of angiotensin II, thus relaxation of smooth muscle is produced which leads to vasodilatation , increase renal salt and water excretion, reduce plasma volume and decrease cellular hypertrophy. ARBs also overcomessome disadvantages of ACE inhibitors, which not only prevents the conversion of angiotensin I to angiotension II but Prevent the ACE Mediated degradation of bradykinin[8].

Material and Method This work was done at the department of pharmacology of Darbhanga medical College & Hospital, Bihar. Regarding ethical aspect I had informed concerned authority of this college.The patients were grouped as control, ramipril and telmisartan for including rise in systolic blood pressure.For studying rise in blood pressure psychognic stress method was used, Each group contained 10 patients. Blood pressure was measured in all 3 groups for forty days from the month of August to September 2020. The dose of ramipril was 5mg once daily and telmisartan was 40mg once daily. Inclusion criteria and exclusion criteria were considered. In inclusion criteria: Patients age between 40-60yrs was taken and patient having sustained elevated systolic blood pressure >140Hg. In exclusion criteria: Patient who took other medication for blood pressure.

Inclusion criteria: Pregnant and lactating woman.

Statistical Analysis

Data was presented in (mean + SEM) and were analysed using student's t-test and ANOVA were applied to compare significance between different groups (P<.05)[7]

Results and Discussion

Systolic blood pressure decline from baseline was measured for different groups. It was (19.0+.5),(14.80+ .40) and (13.0+.52) respectively for telmisartan ramipril and control groups from baseline. The mean blood pressure in three group varied significantly.[F (2.27) =140.54 P=.000]. The mean systolic blood pressure change from the baseline of telmisartan group was more than that with ramiprilgroup (t(18) =8.22.P=. 000]. There was also more decline with telmisartan than with control group (t (18) =6.25 P=.000]. In year 2019 Vaibhatet. aldid a research work and found that ramipril had less potential arterial blood pressurelowering effect than telmisartan.

Table 1: Blood pressure decline

No of sets	No. of participants	Drug used	Blood pressure decline (Mean ±SEM)	t value	P value
1	10	Control	13 ±.52		
2	10	Olmesartan	19.0 ±.5	8.22	.000
3	10	Losartan	14.80 ±.40	6.25	.000

Conclusion

Ramipril is less efficacious than telmisartan as evident from above observation as far as systolic blood pressure is concerned.

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