

ORIGINAL ARTICLE

Effect and safety of beta blockers in hypertensive patients

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ABSTRACT:

Background: Hypertension is a systemic disorder that affects everyone. Approximately 1 billion individuals are impacted globally. The present study was conducted to evaluate the effect and safety of beta blockers in hypertensive patients. **Materials & Methods:** 86 adult patients of hypertension of either gender were randomly assigned to 2 groups. Group I was given 25 mg of atenolol twice a day while Group II was given 25 mg of metoprolol tartrate twice a day. Systolic and diastolic blood pressure readings were taken both before and after the medication treatment began. **Results:** Age group 20-40 years had 3 males and 4 females in group I and 4 males and 5 females in group II, 41-60 years had 6 males and 7 females in group I and 6 males and 7 females in group II and >60 years had 11 males and 9 females in group I and 11 males and 10 females in group II. The difference was non-significant ($P > 0.05$). The mean SBP found to be 154.4 mm Hg in group I and 148.2 mm Hg in group II and DBP was 86.8 mm Hg in group I and 84.6 mm Hg in group II. At baseline, at 6 months, SBP was 132.0 mm Hg in group I and 134.2 mm Hg in group II and 76.4 mm Hg in group I and 77.6 mm Hg in group II. The difference found to be non-significant ($P > 0.05$). **Conclusion:** It was discovered that both beta blockers were equally successful in treating hypertensive patients.

Keywords: Atenolol, Beta blockers, hypertension

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INTRODUCTION

Hypertension is a systemic disorder that affects everyone. Approximately 1 billion individuals are impacted globally. About 20–27% of adult populations are affected. The proportion of elderly people with systemic hypertension is increasing.¹ Between thirty and forty-five percent of people are affected. It is thought to be one of the main causes of kidney and cardiovascular (CVS) disorders.² Hypertension is a major risk factor for cardiovascular and renal disease, and numerous clinical trials including studies in older adults have documented that effective treatment improves survival and confers cardiovascular benefits. Numerous studies on the elderly population have highlighted the value of beta-blockers in the successful management of essential hypertension.^{3,4}

β -Blockers have been a mainstay for antihypertensive treatment over the past half a century.⁵ Historically, β -blockers had been recommended as one of the first-line treatment options for primary hypertension by the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure from its first report in 1977 through its seventh report in 2003.⁶ There are few contrast studies also which opposes the

use of beta blocker as first line treatment for hypertension and their effects have not been found to be better than placebo due to their modest effect on stroke and no significant decrease in mortality or coronary heart disease.⁷ The present study was conducted to evaluate the effect and safety of beta blockers in hypertensive patients.

MATERIALS & METHODS

This study consisted of 86 adult patients of hypertension of either gender. All were selected once they gave their written consent.

Patients demographic profile such as name, age, gender etc. was recorded. Two groups were randomly assigned. There were 43 patients in each group. Group I was given 25 mg of atenolol twice a day while Group II was given 25 mg of metoprolol tartrate twice a day. A comprehensive clinical assessment was conducted. Diabetes, renal illness, lipid disorders, incident cardiovascular (CV) events, and other conditions were noted in the history. Systolic and diastolic blood pressure readings were taken both before and after the medication treatment began. Results of the study was studied statistically. P value below 0.05 was considered significant.

RESULTS

Table I Age & gender wise distribution of patients

Age groups (years)	Group I (43)		Group II (43)	
	Male	Female	Male	Female
20-40	3	4	4	5

41-60	6	7	6	7
>60	11	9	11	10

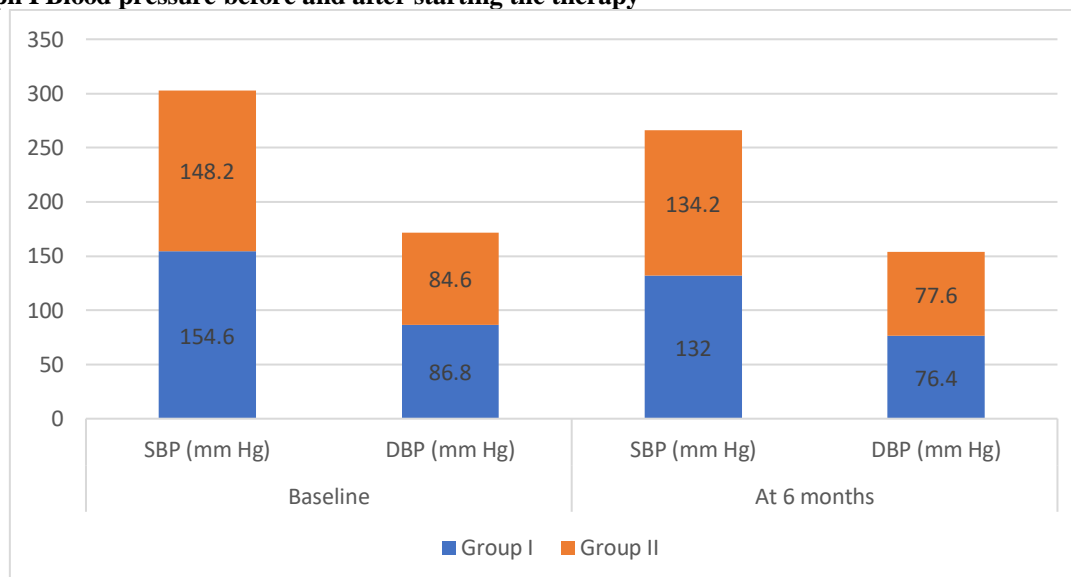
Table I shows that age group 20-40 years had 3 males and 4 females in group I and 4 males and 5 females in group II, 41-60 years had 6 males and 7 females in group I and 6 males and 7 females in group II and >60 years had 11 males and 9 females in group I and 11 males and 10 females in group II. The difference was non-significant (P> 0.05).

Table II Blood pressure before and after starting the therapy

Parameters	Variables	Group I	Group II	P value
Baseline	SBP (mm Hg)	154.6	148.2	0.05
	DBP (mm Hg)	86.8	84.6	0.73
At 6 months	SBP (mm Hg)	132.0	134.2	0.85
	DBP (mm Hg)	76.4	77.6	0.21

Table II, graph I shows that the mean SBP found to be 154.4 mm Hg in group I and 148.2 mm Hg in group II and DBP was 86.8 mm Hg in group I and 84.6 mm Hg in group II. At baseline, at 6 months, SBP was 132.0 mm Hg in group I and 134.2 mm Hg in group II and 76.4 mm Hg in group I and 77.6 mm Hg in group II. The difference found to be non- significant (P> 0.05).

Graph I Blood pressure before and after starting the therapy



DISCUSSION

Globally, hypertension is a major emergency. It is the cause of over 7.5 million deaths worldwide, and by 2025, that figure is predicted to rise to 1.56 billion individuals.⁸ The primary cause of persistent heart disease, brain hemorrhage, and other conditions is hypertension.⁹ Other consequences of hypertension include peripheral vascular disease (PVD), renal failure, visual impairment, retinal hemorrhage, and coronary heart disease (CHD).¹⁰ Since the ailment is typically left undetected, it is known as the silent killer.^{11,12} For the treatment of hypertension, a variety of drugs are employed. While many medications have beneficial effects, very few have negative side effects.^{13,14,15} The present study was conducted to evaluate the effect and safety of beta blockers in hypertensive patients.

We found that age group 20-40 years had 3 males and 4 females in group I and 4 males and 5 females in group II, 41-60 years had 6 males and 7 females in group I and 6 males and 7 females in group II and >60

years had 11 males and 9 females in group I and 11 males and 10 females in group II. When compared to first-line beta blockers, Cayley et al.¹⁶ discovered that placebos showed a greater risk for CVDs. The risk of stroke decreased. There was no discernible difference in the risk of coronary heart disease between beta blockers and placebo. Beta blockers had a considerably worse impact on cardiovascular disease than calcium channel blockers, but they had no discernible difference from diuretics or RAS inhibitors. There was no change in the risk of coronary heart disease between the two treatment modalities. It was discovered that beta blocker users were more likely than diuretic users to stop their therapy due to side effects.

We observed that the mean SBP found to be 154.4 mm Hg in group I and 148.2 mm Hg in group II and DBP was 86.8 mm Hg in group I and 84.6 mm Hg in group II. At baseline, at 6 months, SBP was 132.0 mm Hg in group I and 134.2 mm Hg in group II and 76.4 mm Hg in group I and 77.6 mm Hg in group II. In a

research by Parker et al.¹⁷, there were 3664 CVA occurrences, 3272 heart failure incidents, and 3517 myocardial infarction incidents. Metoprolol tartrate users had hazard ratios of 0.99 for MI, 0.99 for HF, and 0.99 for stroke. Propensity score matching, a different method, produced comparable outcomes in 11176 new users of metoprolol tartrate, who shared demographic and clinical traits with 11176 new users of atenolol.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that both beta blockers were equally successful in treating hypertensive patients.

REFERENCES

- Turnbull F, Neal B, Ninomiya T, Algert C, Arima H, Barzi F, Bulpitt C, Chalmers J, Fagard R, Gleason A, et al. Effects of different regimens to lower blood pressure on major cardiovascular events in older and younger adults: meta-analysis of randomised trials. *BMJ*. 2008;336(7653):1121-3.
- Staessen JA, Gasowski J, Wang JG, Thijs L, Den Hond E, Boissel JP, Coope J, Ekblom T, Gueyffier F, Liu L, et al. Risks of untreated and treated isolated systolic hypertension in the elderly: meta-analysis of outcome trials. *Lancet*. 2000;355(9207):865-72.
- Vasan RS, Beiser A, Seshadri S, Larson MG, Kannel WB, D'Agostino RB, Levy D. Residual lifetime risk for developing hypertension in middle-aged women and men: The Framingham Heart Study. *JAMA*. 2002; 287(8):1003-10.
- Lewington S, Clarke R, Qizilbash N, Peto R, Collins R, Collaboration PS. Agespecific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*. 2002;360(9349):1903-13.
- Messerli FH, Beevers DG, Franklin SS, Pickering TG. beta-Blockers in hypertension: the emperor has no clothes: an open letter to present and prospective drafters of new guidelines for the treatment of hypertension. *Am J Hypertens*. 2003; 16(10):870-873.
- Lewington S, Clarke R, Qizilbash N, Peto R, Collins R, Collaboration PS. Age specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*. 2002;360(9349):1903-13.
- Ong HT. Beta blockers in hypertension and cardiovascular disease. *BMJ*. 2007; 334(7600):946-949.
- Wiysonge CS, Bradley H, Mayosi BM, et al. Beta-blockers for hypertension. *Cochrane Database Syst Rev*. 2007;(1):CD002003.
- Beevers DG. The end of beta blockers for uncomplicated hypertension? *Lancet*. 2005;366(9496):1510-1512.
- Massie BM. Review: available evidence does not support the use of beta blockers as first line treatment for hypertension. *Evid Based Med*. 2007;12(4):112.
- Reid JL. Optimal features of a new beta-blocker. *Am Heart J*. 1988;116(5, pt 2): 1400-1404.
- Drayer DE. Lipophilicity, hydrophilicity, and the central nervous system side effects of beta blockers. *Pharmacotherapy*. 1987;7(4):87-91.
- Ho PM, Zeng C, Tavel HM, et al. Trends in first-line therapy for hypertension in the Cardiovascular Research Network Hypertension Registry, 2002-2007. *Arch Intern Med*. 2010;170(10):912-913.
- Magid DJ, Shetterly SM, Margolis KL, et al. Comparative effectiveness of angiotensin-converting enzyme inhibitors versus beta-blockers as second-line therapy for hypertension. *Circ Cardiovasc Qual Outcomes*. 2010;3(5):453-458.
- Schmittiel J, Selby JV, Swain B, et al. Missed opportunities in cardiovascular disease prevention? low rates of hypertension recognition for women at medicine and obstetrics-gynecology clinics. *Hypertension*. 2011;57(4):717-722.
- Parker et al. Comparative effectiveness of 2-blockers in hypertensive patients. *Arch Intern Med*. 2012;172(18):1406-1412.
- Cayley Jr WE. Are beta blockers effective first-line treatments for hypertension?. *American family physician*. 2007 Nov 1;76(9):1306.