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ORIGINAL ARTICLE

Comparison Between Lercanidipine and Amlodipine for Efficacy and Tolerability in Patients with Hypertension

AMJAD ABRAR[1], MAHBOOB UR REHMAN[2], ANWAR ALI[3], FARHAN FAISAL[4], MALIK ALI RAZA[5], MUHAMMAD FASIH ULLAH KHAN[6]

[1]*Associate professor/Consultant Cardiologist Kulsum International Hospital Islamabad*
[2]*Associate professor Cardiac centre Pakistan Institute of Medical Sciences Islamabad*
[3]*Consultant Cardiologist Kulsum International Hospital Islamabad*
[4]*Assistant Professor Cardiac centre Pakistan Institute of Medical Sciences Islamabad*
[5]*Registrar Cardiology Pakistan Institute of Medical Sciences Islamabad*
[6]*Registrar Cardiology Pakistan Institute of Medical Sciences Islamabad*
Corresponding author: Dr Amjad Abrar, Email: dramjadabrar@gmail.com, Cell+92 333 9964676

ABSTRACT

Introduction: Hypertension has been perceived as a worldwide health worry for non-industrial nations and is hardly depicted in a considerable lot of these nations.

Objectives: The main objective of the study is to find the Comparison between lercanidipine and amlodipine for efficacy and tolerability in patients with hypertension.

Material and methods: This cross sectional, comparative study was conducted in PIMS during January 2021 to June 2021. After permission from hospital ethical committee, total 120 patients meeting the inclusion and exclusion criteria will be enrolled in the study from Medical Emergency and admitted in PIMS. Detailed history, physical examination and necessary investigations will be done to meet the inclusion and exclusion criteria. Informed consent will be obtained.

Results: The data was collected from 120 patients of both male and female. Table 01 shows the mean values of systolic and diastolic BP according to age and gender. The mean systolic and diastolic BP of all the study subjects were 124.2 ± 15.0 mmHg and 83.4 ± 9.5 mmHg, respectively. In men, the highest mean systolic BP and mean diastolic BP were among the eldest age group and preceding eldest age group.

Conclusion: It is concluded that lercanidipine is associated with considerably lower incidence of vasodilation related side effects than amlodipine, especially pedal edema.

Key words: Hypertension, Efficacy, Drugs, Therapy

INTRODUCTION

In spite of their antihypertensive efficacy and of their wide use in the treatment of hypertension, dihydropyridine calcium antagonists are often reported to induce side effects responsible for treatment withdrawal or replacement with drugs of a different class. In the new past, endeavors were given to the improvement of new mixtures or definitions able to do all the while showing a decent adequacy and bearableness [1]. Lercanidipine is the most current of these mixtures. Because of its high lipophilicity and high vascular selectivity, lercanidipine at day by day dosages going from 10 to 20 mg has been displayed to guarantee a continuous and delayed antihypertensive impact, both in fake treatment controlled examinations and in similar investigations versus other antihypertensive medications [2].

Hypertension has been perceived as a worldwide health worry for non-industrial nations and is hardly depicted in a considerable lot of these nations. In Pakistan, hardly any populace based reviews assessed the predominance of hypertension and there is no current broadly delegate study. Raised BP is decidedly correlated to the danger of stroke and coronary illness. Other than coronary illness and stroke, its complexities incorporate cardiovascular breakdown, fringe vascular infection, renal disability, retinal drain, and visual hindrance [3].

Hypertension (or HTN) or hypertension is characterized as strangely high blood vessel circulatory strain. As indicated by the Joint National Committee 7 (JNC7), typical pulse is a systolic BP; 120 mmHg and diastolic BP; 80 mm Hg. Hypertension is characterized as systolic BP level of ≥140 mmHg or potentially diastolic BP level ≥ 90 mmHg. The hazy situation falling between 120–139 mmHg systolic BP and 80–89 mmHg diastolic BP is characterized as "prehypertension". Despite the fact that prehypertension is certainly not an ailment in itself, pre-hypertensive subjects are at more danger of creating HTN [4].

Lercanidipine is a subsidiary of third era CCBs, guarantee to have even and supported pulse bringing down with once-every day dosing. Normal unfriendly medication responses related to CCBs like pedal edema, cerebral pain, discombobulation, palpitation and so forth are supposed to be low with this vasoselective dihydropyridine congener. Not very many clinical preliminaries have been led contrasting this medication and one of its more seasoned and dependable congener-amlodipine [5]. Lercanidipine is a dihydropyridine calcium channel blocker, which is viable in the treatment of gentle to direct fundamental hypertension and confined systolic hypertension. Lercanidipine has a surprising pharmacokinetic profile coming about because of its high lipophilicity. It ties emphatically to the lipid bi-layer of cell layers near the calcium channel receptor from where it is gradually delivered over resulting hours. This lethargic delivery from cell layers gives a 24-h term of pharmacological and restorative activity regardless of the medication's short plasma half-existence of roughly 2–5 hours [6].

Amlodipine is a long-acting di hydropyridine calcium channel blocker, broadly utilized in the treatment of hypertension. It has little impact on atrio-ventricular nodal conduction and insignificant inotropic impacts because of its high selectivity for the fringe vascular system. Several examinations have shown that the medication is successful in restraining the movement of arteriosclerosis and forestalling stroke, just as enhancing cardiovascular confusions in patients with essential hypertension by hindering thoughtful sensory system hyperactivity and expanding parasympathetic action. Through these impacts, amlodipine limits the danger for CVD [7].

OBJECTIVES

The main objective of the study is to find the Comparison between lercanidipine and amlodipine for efficacy and tolerability in patients with hypertension.

MATERIAL AND METHODS

This cross sectional, comparative study was conducted in PIMS during January 2021 to June 2021.

SAMPLING TECHNIQUE: Non- probability consecutive sampling technique.

SAMPLE SIZE: 120 patients (60 in each group) calculated with precision formula

$$\text{Sample size} = \frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

SAMPLE SELECTION:

Inclusion criteria:

- Age between 18 to 60 years.
- Both male and female.
- Patients diagnosed with hypertension.

Exclusion criteria:

- Already taking any anticoagulant drug
- Patients with any other form of cerebrovascular disease.
- Patients suffering from renal disease.
- Any bleeding disorder.
- Patients who are not willing to give consent

DATA COLLECTION METHOD

After permission from hospital ethical committee, total 120 patients meeting the inclusion and exclusion criteria will be enrolled in the study from Medical Emergency and admitted in PIMS. Detailed history, physical examination and necessary investigations will be done to meet the inclusion and exclusion criteria. Informed consent will be obtained.

The data will be collected into two groups:

Group I: Treated with lercanidipine

Group II: Treated with amlodipine

After confirmation of diagnosis, Group I patients will be given lercanidipine 15mg daily twice a day for 21 days then followed by 20mg daily and Group II patients will be given dose adjusted amlodipine (2.5 mg, 5mg, 7.5 mg, 10 mg) daily. All patients exhorted way of life adjustments. At each visit pulse was noted, systolic and diastolic circulatory strain (BP) was recorded in sitting situation following 10 minutes of rest by auscultation technique utilizing mercury sphygmomanometer. The patients were encouraged to abstain from smoking or drinking espresso inside 30 minutes before appraisal of BP. Research center investigations like serum creatinine, SGOT, SGPT, arbitrary glucose level were completed at first day and 12 weeks of study.

The essential viability boundaries were the decrease in standard systolic and diastolic BP. On the off chance that the patient didn't achieve the objective pulse of 140/90 mmHg, the portion was titrated at fourth and eighth weeks by 5mg and 2.5 mg in lercanidipine and amlodipine bunches separately.

Statistical analysis: Statistical software ‘‘SPSS version 22’’ will be used for data analysis. The qualitative data like gender will be presented by frequency and percentage. Means and standard deviations will be computed for the quantitative variables like age (years), NIHSS score and frequency of major and minor bleeding. Independent sample t-test will be used for the comparison of efficacy of Rivaroxaban and warfarin. P-value ≤0.05 will be considered significant.

RESULTS

The data was collected from 120 patients of both male and female. Table 01 shows the mean upsides of systolic and diastolic BP as per age and sex. The mean systolic and diastolic BP of all the review subjects were 124.2 ± 15.0 mmHg and 83.4 ± 9.5 mmHg, individually. In men, the most elevated mean systolic BP and mean diastolic BP were among the oldest age bunch and going before oldest age bunch.

Table 01: Mean systolic and diastolic blood pressure (mm hg) and prevalence (%) of isolated systolic hypertensive and isolated diastolic hypertensive by age and gender.

Age groups (years)	N	Systolic BP (mean ± SD)			Diastolic BP (mean ± SD)		
		Male	Female	Total	Male	Female	Total
25–35	46	123.17 ± 8.54	114.81 ± 9.99	117.84 ± 10.44	82.92 ± 9.0	78.97 ± 7.46	80.59 ± 8.34
35–45	17	123.10 ± 10.77	121.71 ± 15.13	122.90 ± 13.07	85.70 ± 7.66	81.71 ± 9.30	83.75 ± 8.68
45–55	33	132.36 ± 13.21	127.16 ± 18.04	129.66 ± 16.05	89.23 ± 8.16	83.28 ± 10.22	86.14 ± 9.72
55–65	24	133..66 ± 19.53	127.27 ± 15.74	130.97 ± 18.05	86.42 ± 12.15	83.24 ± 9.32	84.83 ± 10.90
Total	120	127.49 ± 14.19	121.39 ± 15.26	124.25 ± 15.05	85.82 ± 9.43	81.34 ± 9.05	83.45 ± 9.49
Test of significance		F = 15.396	F = 15.611	F = 30.466	F = 5.801	F = 4.921	F = 11.174
		p = 0.001	p = 0.001	p = 0.001	p = 0.001	p = 0.002	p = 0.001

The reduction in diastolic BP was also found to be statistically significant ($p<0.001$) at 2, 4, 8 and 12 weeks of therapy, when compared with the baseline readings, in both the groups.

Table 2: Effect of drugs on mean systolic and diastolic blood pressure (mmHg)

Duration	Systolic BP (mean ±SD)	
	Lercanidipine n=60	Amlodipine n=60
Day 0	157.04±8.42	156.81±9.42
2 weeks	154.04±5.65	155.86±6.11
4 weeks	141.64±5.67	151.02±5.95
8 weeks	141.16±4.84	146.68±6.58
12 weeks	133.4±4.86	144±6.51

DISCUSSION

Hypertension is an important public health problem in both the economically developed and developing world. In this far reaching fundamental survey, we portrayed evaluations of the commonness of hypertension in the grown-up Pakistani populace. As of now, there is absence of cross country data with respect to hypertension pervasiveness. Homegrown and worldwide writing look through discovered just a single late survey, which zeroed in on hypertension in Asian nations [7]. Consequently, the present meta-investigation is applicable to the current healthcare need and in view of countless members. This meta-examination gave a solid gauge of the commonness of hypertension in the Pakistani populace. Our outcomes present a definite perspective on the general predominance and weight of hypertension by sex, topographical district and gauge of hypertension pervasiveness with time, examination of the general commonness of hypertension distributed in nearby and global diaries and by study size [8].

This examination showed that lercanidipine essentially brought down pulse inside 15 days of the treatment contrasted with benchmark in larger part of the patients. A steady addition in the antihypertensive activity of lercanidipine was noticed all through investigation period [9]. At the point when antihypertensive adequacy of lercanidipine was contrasted and amlodipine, the two medications appear to be similarly compelling in decreasing systolic and diastolic BP. The distinction in non-responders between two gatherings was additionally measurably unimportant [10].

A few examinations have proposed other potential components. One theory recommends that lercanidipine causes lesser veno-tightening than different medications because of lower thoughtful initiation [11]. Fogari et al. contemplated this distinction by assessing serum levels of norepinephrine. It was seen that lercanidipine treated patients showed lesser norepinephrine levels than patients treated with nifedipine GITS. An alternate impact on vascular porousness and subsequent liquid extravasation has likewise been recommended [12].

CONCLUSION

It is concluded that lercanidipine is related with significantly lower occurrence of vasodilation related incidental effects than amlodipine, particularly pedal edema. The two lipophilic dihydropyridine calcium enemies, lercanidipine and lacidipine, show an essentially preferred decency profile over amlodipine, and thus a superior consistence to a drawn out antihypertensive treatment with these medications can be sensibly anticipated.

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