A study at BRIMS hospital for comparing the tolerability of Cilnidipine and Amlodipine in the treatment of hypertension

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Abstract
Introduction: Few of the antihypertensive medicine have been withdrawn owing ADRs. Some are serious enough leading to hospitalization or withdrawal of treatment.
Objective: To study the tolerability of Cilnidipine and Amlodipine in patients of hypertensive.
Materials and Methods: This study was a collaboration between department of Pharmacology and Medicine of Bidar Institute of Medical Sciences (BRIMS), Bidar. Duration of study was for 9 months from May 2018- January 2019. 100 newly diagnosed mild and moderate hypertensive patients of either sex aged between 18-60yrs were included. ADR were noted and compared using parametric test. Significance was defined as $P < 0.05$.
Result: The patients mean age receiving Cilnidipine was 42.98 ± 8.35 and Amlodipine was 44.48 ± 9.03. On comparison of ADRs between Cilnidipine and Amlodipine it is clear that Amlodipine has more ADRs than Cilnidipine. The Comparison of pedal edema between both the groups show a Statistical Significance with p= 0.0003.
Conclusion: It can be concluded from our study that Cilnidipine seems to be better than Amlodipine in the management of the hypertensive patients.

Keywords: ADRs, Cilnidipine, Amlodipine, Antihypertensive drugs.

Introduction

An increase in systolic blood pressure ≥ 140mmHg and diastolic of ≥ 90mmHg is termed as hypertension. Being a chronic disease it has lead to many cardiovascular risks and also is a major public health problem

World Health Organization (WHO) has elaborated ADR as the drug response which can occur at any dose and which may be unintended and noxious.[1]

In India the prevalence of ADRs is around 16.2%.[2]

Hospital admissions as a result of ADRs are 2.4 to 12% while 0.05 to 0.19% is admitted to hospital due to ADRs.[3]

Although ADRs have increased in recent times but India accounts for only 10% of global intake of medicines while reporting of ADRs is only 2% when compared to rest other countries.[4]

Adverse drug reactions have become major burden leading to morbidity, mortality, and health care costs.[5]

One of the studies in India has shown 20%-40% urban and 12-17% rural population suffers from hypertension.[6]

Amlodipine is third generation dihydropyridine (DHP) CCBs which acts by inhibition L type calcium channel which results in decreased peripheral vascular resistance hence used for the treatment of high blood pressure.[7]

The major problem with Amlodipine is peripheral edema leading to cessation of Amlodipine therapy and substitution of other antihypertensive.[8,9]

Cilnidipine has been classified as a fourth-generation CCB based on its actions on sympathetic neurotransmitter release.[10]

In a study by Ramya et showed that Cilnidipine is well tolerated by the hypertensive patients when compared to amlodipine.[11]

Materials and Methods

It is an Institutional Ethics Committee (IEC) approved study on100 newly diagnosed patients of mild and moderate Hypertension. This 9 months study was a collaboration between the department of Pharmacology and Medicine of Bidar Institute of Medical Sciences, Bidar from May 2018-January2019. Patients of either sex aged between 18-60 yrs were included. The present study is a prospective, open-label, parallel group, comparative study.

Patients aged <18 years and >60 years, Depression and psychosis symptoms, Patients on drugs with known drug interactions with the study drugs, severe hepatic, renal disease and severe cardiac disease, Pregnant and lactating mothers, HIV patients and Patients with cancer were excluded from the study.

Screening of patients included clinical examination followed by biochemical investigations.

1. 50 patients of group A were prescribed Tab Cilnidipine of dose 5mg
2. 50 patients of group B were prescribed Amlodipine of dose 2.5mg

Study procedure was informed and written consent was taken from the subjects.

General physical examination and systemic examination was performed. Blood Pressure on radial pulse was recorded using Mercury Sphygmomanometer in upright position. Complete cardiovascular and respiratory system evaluation was also performed. Patients were called for follow-up visit at 2nd, 4th, and 8th week. The data collected was entered into a specially designed proforma (Case Recording form) and tabulated using Microsoft Office Excel software. Quantitative data are presented as means and standard deviation (mean ± sd). ADR of the two drugs were

compared. Significance was defined as $P < 0.05$

Result

Table 1: Distribution of patients based on age

Group	Mean age (years)	Standard Deviation
Cilnidipine	42.98	8.35
Amlodipine	44.48	9.03

Patient's mean age receiving Cilnidipine was 42.98 ± 8.35 and Amlodipine was 44.48 ± 9.03.

Table 2: Sex wise distribution of patients among two groups

Gender	Cilnidipine	Amlodipine	Total number of cases
Male	33	34	67
Female	17	16	33

Out of total 100 patients, Male: Female ratio of 67:33 was found in the patients enrolled for our study

Table 3: Distribution of patients according to grade of hypertension

Grades	Cilnidipine (N=50)	Amlodipine (N=50)
Mild	19(38%)	23(46%)
Moderate	31(62%)	27(54%))

Both the groups had more patients with moderate elevation of blood pressure.

Table 4: Adverse drug reactions comparison in two groups

ADRs	Drugs	Cilnidipine (n=50)	Amlodipine (n=50)
Pedal Edema		_	13 (26%)
Headache		7 (14%)	5 (10%)
GI Disturbances		5 (10%)	6 (12%)
Dizziness		3 (6%)	4 (8%)
Hypotension		5 (10%)	6 (12%)
Palpitation/ Tachycardia		7 (14%)	9 (18%)
Myalgia		5 (10%)	3 (6%)
Blurring vision		5 (10%)	6 (12%)
Flushing		2 (4%)	2 (4%)
Urinary problem		6 (12%)	6 (12%)
Nausea/Vomiting		9 (18%)	3 (6%)
Others		3 (6%)	2 (4%)
Total		57	65

Amlodipine group has more ADRs than Cilnidipine group. The pedal edema comparison between both groups showed a Statistical Significance with p= 0.0003.

Discussion

This above study was aimed to compare the tolerability of Cilnidipine and Amlodipine CCBs provide specific benefits beyond BP lowering; they are favorable choice as monotherapy and as combination with other classes in treatment of hypertension.[12]

Amlodipine an L type of CCB is known to cause the above ADRs with pedal edema being major ADR 67.[13]

A study done by Adake P, et[14] al showed that both the drugs are equally efficacious in controlling blood pressure but with a lower incidence of pedal edema in cilnidipine group.

There are only a few studies on tolerability profile. A study by Kaur M et al that Cilnidipine wasn't associated with reflex tachycardia and hence beneficial in peripheral edema. Overall, Cilnidipine had prove to be better therapeutic option than amlodipine.[15]

Results are this study were same as the study done by Shetty R justifying the use of Cilnidipine as a replacement or alternative to Amlodipine.[16]

A study by Tripathy PK[17] showed a lower incidence of pedal edema in Cilnidipine group and likewise our study also depicted 13 (26%) patients had pedal edema in Amlodipine group. Nearly 9 (18%) cases of palpitation and tachycardia in Amlodipine and 7 (14%) in Cilnidipine group were noted. 7 (14%) cases of headache was noted in Cilnidipine in comparison to 5 (10%) patients in the Amlodipine group.

Nausea/Vomiting among 9 (18%) patients was the most common ADR reported in Cilnidipine group while on 3(6%) in Amlodipine group had above ADR. Rest all ADRs like GI disturbances; dizziness, hypotension and blurring vision are slightly higher in Amlodipine group. Cilnidipine group has slightly more cases of myalgia.

Amlodipine group reported significantly higher number of ADRs when compared Cilnidipine group.

Conclusion

In our study on hypertensive patients with respect to tolerability, it can be concluded that Cilnidipine is better than Amlodipine.

Conflict of Interest: None.

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