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Comparing the efficacy and cost of cilnidipine with amlodipine in the management of hypertension at a single tertiary care hospital

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Abstract
Background and Objective: High blood pressure, which is now described as a systolic blood pressure over 140 mm Hg and a diastolic blood pressure over 90 mm Hg, is the main cause of death from heart disease, according to the World Health Organization. The goal of this study was to compare how cost-effective Cilnidipine and Amlodipine are for treating high blood pressure in major healthcare facilities.
Materials and Methods: The current study took place over 12 months, from January 2018 to December 2018, at Sree Balaji Medical College and hospital in Chennai, India. It was led by the Department of Pharmacology and the Department of Medicine and looked at newly diagnosed hypertensive patients who went to the outpatient department. It was found that 80 people, of either gender and between the ages of 18 and 60, had mild to moderate high blood pressure. We chose at random 40 patients who were given Cilnidipine and 40 patients who were given Amlodipine.
Results: The 80 people who took part in our study were split evenly between men and women. There were more people in both groups whose blood pressure was slightly higher than normal. When looking at the adverse drug reactions side effects side by side, Amlodipine has more of them than Cilnidipine. We get information about how much the study drug costs each patient on a regular basis and how much their systolic and diastolic blood pressure drops on average in two groups. Our data shows that compared to the Amlodipine group, the Cilnidipine group had fewer adverse drug reactions and no cases of leg edema.
Conclusions: Our study shows that Cilnidipine may be a better value for money than Amlodipine, since the people who took Cilnidipine had a lot of fewer adverse drug reactions for the same price.

Keywords: Cilnidipine, amlodipine, hypertension, tertiary care hospital

Introduction
The World Health Organization says that high blood pressure (HTN) is the main reason people die from heart disease. In 2000, it was thought that 972 million people, or 26.4% of the adult population, around the world had high blood pressure. The number of adults with high blood pressure will hit 1.56 billion by 2025, which is 60% more than what is currently thought. In Asian countries, about 25% of people with high blood pressure had their condition well controlled, even though only about 19% were taking medicine [1-3].
According to the National Health Services Survey of 2003, people with high blood pressure had direct hospital costs of £20.2 billion. Complications from high blood pressure that isn't under control are the main reasons people get sick and die. About 25% of other cardiovascular diseases, 47% of ischaemic heart disease, and 54% of strokes around the world were caused by high blood pressure. The highest rates of stroke-related death and disability-adjusted life years were found in people with high blood pressure in East Asia and the Pacific. When someone has a stroke, their systolic and diastolic blood pressure go up together [4-6].
In real life, people with high blood pressure take diuretics, α-blockers, β-blockers, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and organic calcium channel blockers (CCBs). People with high blood pressure and other heart problems take these drugs, either by themselves or with other medicines [5-7]. The pharmacokinetic and therapeutic profiles of amlodipine are truly impressive. It is a calcium channel blocker. The only thing that worries people about this medicine is how it might cause peripheral swelling. Several studies show that peripheral edema happens in as many as 30% of people with high blood pressure who are treated with amlodipine. On the other hand, cilnidipine, a younger calcium channel blocker, is known for its ability to stop sympathomimetic action [6-8].

Most ischemic strokes happen to people with stage 1 hypertension or pre-hypertension. Taking good care of high blood pressure greatly lowers the chance of having a cerebral or hemorrhagic stroke. A small drop in blood pressure over three to four years lowers the risk of all cardiac events by 35% in people with fairly difficult hypertension [8-10]. This study aimed to assess the cost-effectiveness of Cilnidipine and Amlodipine in the treatment of hypertension in major healthcare facilities.

Materials and Methods

This study was conducted over a 12-month period, from January 2018 to December 2018. By the Department of Pharmacology in conjunction with the Department of Medicine, concentrating on newly diagnosed hypertensive patients attending the outpatient department of General Medicine at Sree Balaji Medical College and hospital, Chennai, India. There were 80 newly diagnosed persons, of either gender, aged 18 to 60, with mild to moderate hypertension. We randomly chose and classified 40 patients treated with Cilnidipine and Amlodipine, respectively.

Inclusion Criteria

- Mild and moderate hypertensive.
- Age 18 to 60 years
- Patients of both gender

Exclusion Criteria

- Patients aged 60 and above
- Pregnant and lactating lady

Results

All subjects provided written consent after receiving thorough information about the study's procedures. During this period, a systematic and comprehensive physical examination was carried out. The radial pulse blood pressure was measured using an upright Mercury sphygmomanometer. Both the heart and lungs were thoroughly examined. Patients were contacted for follow-up appointments in weeks two, four, and eight following the initial eight weeks of recruitment. A custom-made proforma was used to compile the data for the study.

Table 1: Age distribution of two groups of patients

Sr. No.	Group	Mean Age	SD
1	Cilnidipine	40.12	8.14
2	Amlodipine	42.31	9.16

Patients who took Cilnidipine had an average age of 40.12, while those who took Amlodipine had an average age of 42.31, as shown in Table 1.

Table 2: Patient sex distribution in two groups

Gender	Cilnidipine	Amlodipine	Total Cases
Male	30	10	40
Female	10	30	40

We identified a male-to-female ratio of 50:50 among the 80 patients who participated in our study (Table 2).

Table 3: Patient distribution by hypertension grade

Sr. No.	Grades	Cilnidipine (40)	Amlodipine (40)
1	Mild	20	15
2	Moderate	20	25

There were more patients with mild elevations of blood pressure in both groups, as seen in Table 3.

Discussion

Stroke is the second most common cause of death in the world, killing 4.4 million people every year out of a total of 50.5 million deaths. Epidemiological studies show that stroke is more than five times more common than myocardial infarction and is the top cause of disability in adults. It is also the second most common cause of death. A survey done by the National Health Services in 2003 found that strokes directly cost the health system £24.3 billion [10-12].

High blood pressure is the main thing that makes you more likely to have both ischemic and haemorrhagic strokes. The link between high blood pressure and stroke has been clear for a long time. A review of randomized controlled trials found that lowering blood pressure was linked to a 30% to 40% lower chance of stroke. Effective drug treatments for high blood pressure are necessary to keep hypertensive people from having another stroke [13-15].

Medications used to treat high blood pressure come in many types and work in different ways. Some of the most important and widely used drugs are thiazide diuretics, angiotensin-converting enzyme inhibitors, beta blockers, calcium channel blockers, and angiotensin II receptor blockers.

The modern and effective group of antihypertensive drugs called angiotensin II receptor blockers (ARBs) includes valsartan and losartan. Because they are better tolerated and work better, they are mostly used to treat high blood pressure in people who can't take angiotensin-converting enzyme inhibitors [14-16].

The results of clinical studies showed that ARBs did not have any negative effects on kidney function, even in people who had chronic renal failure. However, because their half-lives are so short, many ARBs may need to be taken twice a day in order to successfully control blood pressure in some people, which greatly increases the cost. Calcium channel blockers (CCBs) are another common type of blood pressure medicine. They make up about 60% of the population, and doctors are prescribing more and more drugs to treat high blood pressure [17-19].

Our study found that the average age of people who were given amlodipine was 44.48 ± 9.03, and the average age of people who were given cilnidipine was 42.98 ± 8.35. Out of the 100 cases in our study, there were exactly as many men as women. When looking at the adverse drug reactions (ADRs) side effects side by side, Amlodipine has more of them than Cilnidipine [18-20].

The Cilnidipine group did not have pedal swelling like the Amlodipine group did. There were more people in both groups whose blood pressure was slightly higher than normal. We get information about how much the study drug costs each patient on a regular basis and how much their systolic and diastolic blood pressure drops on average in two groups [20-22].

Conclusion

Our results demonstrate that the Cilnidipine group experienced fewer adverse medication reactions and zero instances of leg edema when contrasted with the Amlodipine group. Pedal edema occurred less frequently in the group treated with cilnidipine. Pedal edema, the most

prevalent adverse event of Amlodipine, was experienced by thirteen patients in the other group. The Amlodipine group had nine instances of arrhythmia and rapid heart rate, whereas the Cilnidipine group had just seven. Headaches occurred seven times for those using cilnidipine and five times for those taking amlodipine. At almost the same cost as Amlodipine, our study found that Cilnidipine significantly reduced the number of adverse drug reactions. This suggests that Cilnidipine could be a more cost-effective option than Amlodipine.

Conflict of Interest
None

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