

Pharmaceutical Analysis of Nifedipine Combined with Benazepril in the Treatment of Senile Hypertension

Honggao Duan

School of Pharmaceutical Engineering, Shenyang Pharmaceutical University, Benxi, Liaoning, 117004, China

Abstract: Objective: To analyze the pharmaceutical effect of nifedipine combined with benazepril in the treatment of senile hypertension. Methods: A total of 70 elderly patients with hypertension from January 2021 to January 2022 were randomly divided into two groups, 35 patients in each group. The patients in the control group were treated with nifedipine, while the patients in the observation group were given benazepril. The time of lowering systolic and diastolic blood pressure to normal, the monitoring values of systolic and diastolic blood pressure before and after treatment, the total effective rate and adverse reactions were compared between the two groups. Results: The time of lowering systolic and diastolic blood pressure to normal in the observation group was shorter than that in the control group. After treatment, the monitoring values of systolic and diastolic blood pressure were lower than those in the control group, and the total effective rate was higher than that in the control group, $P < 0.05$. There was no significant difference in adverse reactions between the two groups ($P > 0.05$). Conclusion: Nifedipine combined with Benazepril is effective in the treatment of senile hypertension.

Keywords: Nifedipine; Benazepril; Senile hypertension; Pharmaceutical action

1. Introduction

Clinically, hypertension is a common chronic disease, and the age, gender and course of disease will be affected by the patient's age, gender, course of disease and other factors, and the control of blood pressure is limited, or the patient's cognitive ability is poor, so the overall treatment will be more difficult when intervening, so it is very important to choose appropriate intervention measures. The incidence of hypertension in the elderly is increasing year by year, and it is difficult to control and treat related diseases. Therefore, it is very important to choose appropriate drugs for the overall treatment, because it has strong practical value and practical value. A drug based on nifedipine has a good clinical effect, but the effect of using this drug alone is not very good, so it is recommended to use it in combination^[1]. At present, in the treatment of elderly patients with hypertension, nifedipine controlled-release tablets and benazepril can be used for clinical joint intervention, which can effectively alleviate the condition and lower blood pressure, and make corresponding plans according to the actual situation of patients, so as to better guide the patient's condition and make it return to normal. Therefore, this study observed and compared the clinical efficacy of related therapies, and analyzed its clinical application value and efficacy. We included 70 elderly patients with hypertension and analyzed the pharmaceutical effects of nifedipine combined with benazepril in the treatment of elderly hypertension, as follows.

2. Data and methods

2.1 General information

A total of 70 elderly patients with hypertension from January 2021 to January 2022 were selected, and the number table was randomly divided into two groups with 35 cases in each group. Among them, there were 23 males and 12 females in the control group, aged 61-78 (65.51 2.21) years. The course of disease was 2-14 years, with an average of (12.45 2.55) years. The observation group consisted of 23 males and 12 females, aged 61-79 (65.12 2.73) years. The course of disease was 2-13 years, with an average of (12.56 2.31) years. The statistical comparison between the two groups showed that P was

greater than 0.05. This study was approved by ethics.

2.2 Methods

Patients in the control group were treated with nifedipine, 30mg orally once a day, and the dosage was adjusted according to the patient's situation for 2 months. The observation group added benazepril on this basis. 10mg was taken orally once a day, and the dosage was adjusted according to the patient's specific blood pressure changes during the treatment, and the treatment continued for 2 months.

2.3 Observation indicators

The time of lowering systolic and diastolic blood pressure to normal, the monitoring values of systolic and diastolic blood pressure before and after treatment, the total effective rate and adverse reactions were compared between the two groups.

2.4 Curative effect standard

The judgment basis of treatment effect is: effective, effective and ineffective.

Remarkable effect: clinical symptoms such as dizziness and headache are completely eliminated, systolic blood pressure and diastolic blood pressure are reduced to normal or above 30 mm Hg, and diastolic blood pressure is reduced above 20 mm Hg;

Effective: the patient has clinical manifestations such as dizziness and headache, and the systolic blood pressure drops by 10-29 mmHg, and the diastolic blood pressure drops by 10-19 mmHg;

Ineffective: The patient's clinical symptoms such as dizziness, headache, systolic blood pressure and diastolic blood pressure do not meet the above indicators. Excluding inefficiency, the total effective rate is calculated^[2].

2.5 Statistical methods

In SPSS22.0 software, counting χ^2 statistics, measuring T test, $P < 0.05$ means that the difference is significant.

3. Results

3.1 Comparison of the time when systolic and diastolic blood pressure were lowered to normal between the two groups.

The time of reducing systolic and diastolic blood pressure to normal in the observation group was shorter than that in the control group ($P < 0.05$), as shown in Table 1.

Table 1: Comparison of the time when systolic and diastolic blood pressure were lowered to normal between the two groups ((x s, d))

group	Diastolic pressure is lowered to normal time.	Systolic blood pressure is lowered to normal time
Control group (35)	9.56±2.91	11.25±3.18
Observation group (35)	6.21±1.21	8.19±2.51
t	8.024	7.935
P	0.000	0.000

3.2 Comparison of monitoring values of systolic and diastolic blood pressure before and after treatment

Before treatment, the monitoring values of systolic and diastolic blood pressure of the two groups were compared, $P > 0.05$, while after treatment, the monitoring values of systolic and diastolic blood pressure of the two groups were improved, while those of the observation group were significantly lower than those of the control group, $P < 0.05$. As shown in Table 2.

Table 2: Comparison of monitoring values of systolic and diastolic blood pressure before and after treatment ((x s))

group	period	Diastolic pressure (mmHg)	Systolic blood pressure (mmHg)
Observation group (35)	Before treatment	96.13±6.91	151.25±3.28
	After treatment	78.56±3.21	122.19±2.35
Control group (35)	Before treatment	96.14±6.58	151.22±3.18
	After treatment	85.72±4.53	135.14±2.12

3.3 Comparison of total effective rate

The total effective rate of the observation group was higher than that of the control group, $P < 0.05$. As shown in Table 3.

Table 3: Comparison of total effective rate between two groups [number of cases (%)]

group	show effect	effective	be invalid	Total effective rate
Control group (35)	10	16	9	26(74.29)
Observation group (35)	18	15	2	33(94.29)
χ^2				5.285
P				0.022

3.4 Comparison of adverse reactions between the two groups

There was no significant difference in adverse reactions between the two groups. There was only one case of nausea in the control group and only one case of edema and one case of irritating dry cough in the observation group ($P > 0.05$).

4. Discussion

Hypertension is a common cardiovascular disease, and its clinical manifestations in the elderly are simple systolic hypertension, large pulse pressure difference, large blood pressure fluctuation and prone to postural hypotension. Clinically, according to the patient's condition, we should reduce blood pressure as much as possible, and at the same time pay attention to controlling related risks, minimize the incidence and mortality of cardiovascular diseases, and ensure personalized treatment. In the drug treatment of senile hypertension, firstly, the dosage should be gradually increased according to the patient's tolerance and antihypertensive response, and if necessary, the drug can be combined to improve the curative effect.

The clinical features of elderly patients with hypertension are (1) high blood pressure during simple contraction. Among the elderly patients with hypertension, systolic hypertension accounts for about 50%, and the increase of systolic blood pressure has a greater risk of cardiovascular disease, followed by biphasic hypertension and then simple systolic hypertension. In elderly patients with hypertension, systolic blood pressure will increase with age, and diastolic blood pressure will gradually decrease. In the elderly in diastolic period, the decrease of vascular compliance leads to the decrease of vascular elasticity and buffering capacity, which leads to the decrease of vascular elasticity. In diastolic period, systolic blood pressure increases and pulse pressure increases, which is due to its insufficient elasticity. (2) Blood pressure changes greatly. Postural hypotension is a common postural hypotension in the elderly. Observing the blood pressure of patients after lying flat for 10 minutes and standing for 3 minutes, the results show that compared with lying position, the systolic blood pressure drops by more than 20 mmHg, the average arterial pressure drops by 10%, and postural hypotension accounts for more than 30%. (3) High pulse pressure difference. Experts from the European Society of Hypertension believe that pulse pressure and arterial stiffness are important factors affecting cardiovascular diseases in the elderly, especially myocardial infarction. Clinical research shows that for every 10mm Hg increase, the mortality and the risk of stroke of patients are increased by 16% and 11% respectively. (4)

The circadian rhythm of blood pressure is quite different. Normal people's blood pressure will be 10%-20% lower at night than during the day, which is normal. However, the blood pressure of patients with hypertension will decrease due to the decrease of arterial elasticity and arteriosclerosis. At night, the blood pressure will decrease by 10% to 20%. At night, the blood pressure will not decrease, but will increase, increasing the damage of target organs such as heart, brain and kidney. (5) Coexistence of multiple diseases. Hypertension in the elderly is related to diabetes, cerebrovascular diseases, coronary heart disease, heart failure and other diseases. Usually, taking more drugs and taking more drugs will lead to metabolic pressure on the kidneys and liver.

Hypertension in the elderly is a common and frequently-occurring disease, and its main causes are: ① abnormal sympathetic nerve activity, which increases the adrenaline content in the blood; ② The thickness of the inner wall of blood vessel increases, which weakens its elasticity and is often accompanied by atherosclerosis; ③ Decreased sodium excretion in renal tissue may lead to insulin tolerance. The main treatment methods of hypertension in the elderly are: calcium channel blockers, β receptor antagonists, diuretics, angiotensin converting enzyme inhibitors and so on. The high blood pressure of the elderly will generally cause a series of diseases, so we should pay attention to the changes of blood pressure^[3]. If blood pressure is abnormal, it is necessary to cooperate with drugs in time and monitor the changes of blood pressure in real time. People aged 65-79 can take antihypertensive drugs to lower their blood pressure if their blood pressure exceeds 150/90 mmHg. After the age of 80, if the blood pressure exceeds 160 mmHg, you can take antihypertensive drugs. Patients with hypertension complicated with other complications should choose the appropriate treatment plan according to their specific conditions, try not to lower their blood pressure too quickly, and take steps to lower their blood pressure. There are significant differences between elderly hypertensive patients and young hypertensive patients in drug use. There are six kinds of drugs^[4]: sartans, β -blockers, α -blockers, horizon-blockers, prills and diuretics. These six drugs are antihypertensive drugs for the elderly, but they should be selected according to the actual situation of patients. According to the patient's own situation and the factors causing hypertension, the appropriate drugs should be selected reasonably. Therefore, no medicine has a better effect, and only the right medicine can achieve the best effect. Old people should start with low dosage, accurately measure blood pressure before and after taking medicine, and decide the dosage according to the actual reaction of patients to drugs. The physical quality of the elderly is relatively poor. If you take certain drugs, the effect of lowering blood pressure is not very good. You can slowly increase the dosage of drugs and the drugs used, so that patients have a certain adaptation time. The vascular function of the elderly is weak, and their regulatory ability is poor. If the blood pressure is lowered too quickly, it will cause insufficient blood supply to some important organs, resulting in dizziness, insufficient blood supply to the brain, renal dysfunction, acute myocardial infarction and other complications. Therefore, the treatment of hypertension in the elderly should be moderate and gentle, and should not be rushed, so as not to be counterproductive. Therefore, for different hypertensive patients, it is necessary to use drugs under the guidance of doctors^[5].

Among them, calcium channel blocker is a drug composed of many chemical structures, which has the functions of blocking L-channel of calcium ion and inhibiting myocardial calcium ion and vascular smooth muscle, thus relaxing vascular smooth muscle and lowering blood pressure. Calcium channel blocker is a drug with rapid antihypertensive effect, which can be used in patients with moderate and severe hypertension, especially those with systolic hypertension. Nifedipine is a calcium channel blocker, which can inhibit vasoconstriction, inhibit the influx of calcium ions, enlarge the surrounding arterioles, reduce vasoconstriction and lower blood pressure^[6-7]. Angiotensin converting enzyme inhibitor can be used in elderly hypertensive people. By analyzing its specific efficacy, it can inhibit ACE, promote the production of angiotensin II, inhibit kallikrein, reduce the degradation of bradykinin, promote vasodilation and lower blood pressure. For patients with impaired glucose tolerance, heart failure, diabetic nephropathy proteinuria, diabetic nephropathy proteinuria and other complications, angiotensin converting enzyme inhibitors have a significant antihypertensive effect^[8-9]. However, this drug can not be used in pregnancy, hyperkalemia, renal function stenosis and other people. After treatment, there will be some side effects, mainly dry cough, generally about 10%. After stopping the drug, this side effect will disappear, which is related to the increase of bradykinin level in the body. Benazepril is an anti-angiotensin inhibitor, which can inhibit human angiotensin II, reduce the burden on the heart and the pressure on the glomerulus, thus achieving the purpose of long-term blood pressure reduction. The combination of the above two drugs can inhibit left ventricular hypertrophy, reduce heart failure, protect target organs, reduce the incidence of side effects and increase blood pressure control rate^[10]. This study shows that the time for the observation group to reduce systolic and diastolic blood pressure to normal is shorter than that of the control group, and the monitoring values of systolic

and diastolic blood pressure after treatment are lower than that of the control group, and the total effective rate is higher than that of the control group, $P < 0.05$. There was no significant difference in adverse reactions between the two groups ($P > 0.05$). Prove the advantages of combined medication.

To sum up, nifedipine combined with benazepril is effective in the treatment of senile hypertension. The physical function of the elderly will decline to some extent, which will directly affect their physiology and pathology. Its etiology, clinical characteristics, treatment plan and other aspects have their own particularity, so we can make a treatment plan according to its characteristics in clinic to improve the treatment effect and stabilize blood pressure. Clinical application of calcium channel blockers and angiotensin converting enzyme inhibitors can better stabilize blood pressure and improve prognosis.

References

- [1] Shang Jianhua. Observation on the efficacy and safety of benazepril combined with metoprolol in the treatment of senile essential hypertension with heart failure [J]. *Guizhou Medicine*, 2022, 46(06): 930-931.
- [2] Zhang Lifeng. Observation on the effect of metoprolol combined with benazepril in the treatment of senile hypertension with heart failure and the level of cardiac function [J]. *Famous doctor*, 2022, (09): 186-188.
- [3] Yu Xiangzhi. To observe the clinical effect of Benazepril combined with metoprolol tartrate in the treatment of elderly patients with essential hypertension complicated with heart failure [J]. *Smart Health*, 2022, 8(07):92-94+104.
- [4] Tao Shipeng. Clinical efficacy of benazepril combined with metoprolol in the treatment of senile essential hypertension complicated with heart failure [J]. *guide of china medicine*, 2022,20(05):53-56.
- [5] Huang Chenbin, Zhang Yinghui, Chen Yangbao. Clinical effect of metoprolol combined with benazepril on elderly patients with essential hypertension complicated with heart failure [J]. *Journal of Clinical Rational Drug Use*, 2022, 15(02):49-52.
- [6] Sungwana W, Nakaramurack C, Weeraphon B, et al. Telepharmacy during home isolation: drug-related problems and pharmaceutical care in COVID-19 patients receiving antiviral therapy in Thailand[J]. *Journal of Pharmaceutical Policy and Practice*, 2023, 16(1).
- [7] Liu Xiaofei. Efficacy analysis of benazepril combined with furosemide in the treatment of elderly patients with essential hypertension and heart failure [J]. *Inner Mongolia Medical Journal*, 2021, 53(12): 1462-1464+1467.
- [8] Xie Lifang. Gastrodin injection combined with Benazepril in the treatment of elderly patients with essential hypertension [J]. *Clinical Practice of Integrated Traditional Chinese and Western Medicine*, 2021, 21(23):124-125.
- [9] Liu Yingli, Liu Yadong, Cai Yong, Shao Guoxi. Effects of Benazepril combined with Levamlodipine besylate on vascular endothelial function and lipid peroxidation in elderly hypertensive nephropathy patients [J]. *China Journal of Gerontology*, 2021, 41(23):5236-5239.
- [10] Wu Lu, Chen Guang. Effect of Fufang Yangxue Ningfang on blood pressure variability in elderly hypertensive patients [J]. *Shenzhen Journal of Integrated Traditional Chinese and Western Medicine*, 2021, 31(22):66-68.