

THE THERAPEUTIC EFFECT OF IRBESARTAN COMBINED WITH NURSING CARE IN THE TREATMENT OF PATIENTS WITH ESSENTIAL HYPERTENSION

XUE TENG¹, KEYI GUO¹, YAN GU¹, JIA LIU¹, XIAOJUN YANG², XINLEI MA^{1,*}, WEI LV^{1,*}

¹Department of Cardiology, The First Hospital of Jilin University, Changchun, 130000, China - ²Department of Medical Care, The First Hospital of Jilin University, Changchun, 130000, China

ABSTRACT

Objective: To observe and analyze the effect of irbesartan combined with nursing in treating patients with essential hypertension.

Methods: 160 patients with essential hypertension treated in our hospital were enrolled as research subjects and divided into a study group and a control group, each containing 80 patients. The patients in the study group were treated with irbesartan combined with high-quality nursing mode, while the control group was treated with oral administration of nifedipine controlled-release tablet combined with routine nursing mode. The therapeutic effects of the two groups were compared.

Results: The blood pressure levels of the two groups were compared after the treatment and the results showed that the improvement effect of the study group was significantly better than that of the control group, $p < 0.05$. The quality of life of the two groups of patients was compared before and after treatment; the results showed that the study group had a significant advantage over the control group, $p < 0.05$. Compared with the control group, the overall nursing satisfaction of the study group was higher, $p < 0.05$.

Conclusion: Irbesartan combined with high-quality nursing mode can help patients with essential hypertension to better control blood pressure level and get a better therapeutic effect.

Keywords: Patients with essential hypertension, irbesartan, high-quality nursing, treatment effect.

DOI: 10.19193/0393-6384_2021_6_505

Received March 15, 2021; Accepted June 20, 2021

Introduction

Based on the current level of medical development and examination methods, if the exact cause of blood pressure rise is known, the hypertension is called secondary hypertension. Conversely, if the exact cause of blood pressure rise cannot be found, it is called essential hypertension. Most hypertension cases are essential hypertension. To obtain an accurate diagnosis of essential hypertension, secondary hypertension should be excluded first. Currently, it is believed that secondary hypertension accounts for 5%~10% of total hypertension cases^(1, 2). However, with the continuous progress of medical development and examination methods, the proportion of secondary

hypertension will continue to increase, while the proportion of essential hypertension will continue to decline. Essential hypertension is caused by a combination of genetic and environmental factors. In 2005, the American society of hypertension (ASH) proposed that hypertension is a progressive cardiovascular syndrome caused by many causes, which can lead to changes in the heart and vascular function and structure. Therefore, the main goal of the treatment of essential hypertension is to minimize the total risk of cardiovascular death and disability^(3, 4). Irbesartan and nifedipine are widely used as effective drugs to treat hypertension. This study provides a detailed analysis of the therapeutic effect of irbesartan combined with nursing care in the treatment of patients with essential hypertension.

Material and method

General data

In this study, 160 patients who had been diagnosed and treated for essential hypertension (as shown in Figure 1) in our hospital from January 2017 to May 2019 were enrolled as research subjects. The selected patients were randomly divided into a study group and a control group, each containing 80 patients. Of the 80 patients in the study group, 43 were male, and 37 were female, with an average age of 68.3 ± 3.2 years. Of the 80 patients in the control group, there were 42 males and 38 females with an average age of 66.2 ± 3.8 years. There was no significant difference in general data between the two groups, $p > 0.05$. All selected subjects met the criteria of the Chinese guidelines for the prevention and treatment of hypertension (revised edition in 2004) (imaging examination as shown in Figure 2), $140 \text{ mm Hg} \leq$ systolic blood pressure $< 160 \text{ mm Hg}$ ($1 \text{ mm Hg} = 0.133 \text{ kpa}$), $95 \text{ mm Hg} \leq$ diastolic blood pressure $< 110 \text{ mm Hg}$. Complete examination and treatment data of patients could be collected. The patient had no allergy to or discomfort with the drugs examined in this study. The study was approved by the hospital ethical association, and the patient signed informed consent before the study. Patients with secondary hypertension, poor compliance, patients who refused to participate in the study, and those with diseases that had a serious impact on this study were excluded.

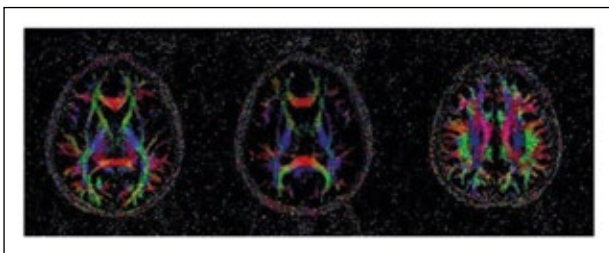


Figure 1: Color tensor imaging of hypertension.



Figure 2: Imaging examination of the patient.

Methods

Treatment method

Patients in the control group were treated with nifedipine combined with conventional nursing measures. Oral administration of nifedipine controlled-release tablets (Shanghai Modern Pharmaceutical Co., Ltd., SFDA approval number H20000079) was given at a dose of 30mg, once a day. The nursing contents include monitoring the blood pressure level frequently, answering the patients' questions, guiding a healthy diet, and so on. On the basis of nifedipine controlled-release tablets, the patients in the study group were subjected to oral administration of irbesartan tablets (Anhui Global Pharmaceutical Co., Ltd., SFDA approval number H20000545) at a dose of 150mg, once a day. Meanwhile, the high-quality nursing mode was carried out for patients in the study group. First, a special comprehensive hypertension nursing management team is set up.

In addition to the head nurse and the attending doctor, a special person is assigned to take charge of the nursing of patients with essential hypertension, to strengthen the communication with patients, and to establish a good nurse-patient relationship. Regular lectures on essential hypertension knowledge will be carried out to help patients to acquire a proper understanding of the disease, understand the prevention and control measures. Second, nursing staff should form nursing files, record the general information, blood pressure level, and medical history of patients, and adjust to the treatment and nursing plan reasonably at any time.

Third, health education and psychological counseling should be carried out. One-to-one health education should be carried out and scientific health education of essential hypertension should be put forward according to the patients' specific conditions, living habits, cultural level and other factors. Nursing staff should help patients to cope with negative emotions and maintain a positive and optimistic attitude.

Fourth, carrying out diet and exercise care: Patients with essential hypertension should be instructed to reasonably adjust salt intake, take more low-calorie, high-quality protein, high-fiber food, such as celery and sweet potato. Moreover, patients are encouraged to take aerobic exercise but the intensity of exercise should be controlled carefully⁽⁵⁾. At the same time, the patient is instructed to monitor blood pressure daily after discharge.

Irbesartan tablets are mainly used to treat essential hypertension. The chemical name is 2-butyl-3-[[o-1h-5-tetrazolidophenyl) benzy]-1, 3-diazinol⁽⁴⁾ none-1-ene-4-ketone, the molecular formula is C₂₅H₂₈N₆O, and the molecular weight is 428.5. Irbesartan is an effective, orally active selective angiotensin-ii receptor (AT1 subtype) antagonist. Irbesartan is absorbed well after oral administration and its absolute bioavailability is about 60-80%.

Nifedipine sustained release tablet is mainly composed of nifedipine, whose chemical name is 2, 6-dimethyl-4 - (2-nitrophenyl) -1, 4-dihydro-3, 5 pyridine dimethyl diformate, the molecular formula is C₁₇H₁₈N₂O₆, and the molecular weight is 346.343. Nifedipine is a calcium ion antagonist of 1 and 4 dihydropyridine, which can reduce calcium ions entering cells through slow calcium channels. Nifedipine specifically acts on the smooth muscle cells of cardiac muscle cells, coronary arteries and peripheral resistance vessels.

It can dilate coronary artery and incomplete occlusion area sound blood vessels, weaken the tension of coronary artery smooth muscle, avoid vasospasm, improve the blood flow of narrow vessels, and improve oxygen supply.

Observational indexes

The blood pressure levels of the two groups before and after treatment were compared, and the overall effective rate was calculated. The therapeutic effect was evaluated in accordance with the guiding principles of drug clinical research⁽⁶⁾.

The criterion for significant effectiveness is defined as diastolic blood pressure decrease by more than 20mmHg or that decreased to the reference range after the treatment.

The criterion for effectiveness is defined as diastolic blood pressure decreased by 30mmHg after the treatment. The criterion for ineffectiveness is defined as no significant improvement in blood pressure after the treatment. Meanwhile, the rate of adverse reactions was calculated for the two groups.

Statistical method

Statistical analysis software SPSS21.0 was used to process the data. The measurement data were expressed by mean ± average ($\bar{x} \pm s$), with t-test conducted for intergroup comparison.

Enumeration data were expressed by natural (n) and percentage (%), with X² used for intergroup comparison. The intergroup difference is statistically significant when P<0.05.

Results

Comparison of improvement effect of blood pressure level between two groups

As shown in Table 1, the improvement degree of blood pressure in the study group was significantly better than that in the control group (p<0.05).

Group	Diastolic blood pressure (mmHg)		Systolic blood pressure (mmHg)	
	Before treatment	After treatment	Before treatment	After treatment
Study group (n=80)	96.79±6.70	80.13±7.08	149.70±10.24	130.28±9.25
Control group (n=80)	95.78±8.16	90.22±9.04	148.66±11.27	140.27±9.23
t	0.27	8.94	0.18	12.36
p	>0.05	<0.05	>0.05	<0.05

Table 1: Comparison of improvement effect of blood pressure level between two groups ($\bar{x} \pm s$).

Comparison of quality of life between two groups

As shown in Table 2, after the implementation of different nursing modes for patients in the study group and the control group, the results showed that the quality of life in the study group was significantly better than that in the control group, p<0.05.

Group	Number of cases	Physiological function	Emotional function	Social function	General health state	Mental function	Energy
Study group	80	79.80±3.25	78.96±3.20	82.35±2.18	60.78±3.22	75.63±4.02	65.79±2.04
Control group	80	72.20±2.46	66.88±2.58	73.20±2.59	49.06±3.01	65.80±2.06	55.49±3.28
t		6.70	20.19	6.79	8.53	11.22	13.27
p		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table 2: Comparison of quality of life between two groups ($\bar{x} \pm s$).

Comparison of overall nursing satisfaction between the two groups

As shown in Table 3, the overall nursing satisfaction of the study group was higher than that of the control group, p<0.05.

Group	Very satisfactory	Satisfactory	Unsatisfactory
Study group (n=80)	60	18	2
Control group (n=80)	42	22	16
X ²			
p			

Table 3: Comparison of overall nursing satisfaction between the two groups [n (%)].

Discussion

Hypertension is a major risk factor for cardiovascular and cerebrovascular diseases. Essential hypertension is one of the most important types of hypertension, and its specific causes are unknown. It is generally believed that essential hypertension may be related to factors such as high-salt diet, obesity, alcoholism, mental tension, genetics and age growth, and drug therapy is the main treatment approach^(7, 8). Irbesartan is an effective, orally active selective angiotensin-II receptor (AT1 subtype) antagonist. Irbesartan blocks all the effects of angiotensin-ii mediated by AT1 receptors, regardless of its source or synthetic pathway of angiotensin-II. The selective antagonism of irbesartan to the angiotensin-II receptor (AT1) results in increased plasma renin and angiotensin-II levels and decreased plasma aldosterone levels.

Studies have shown that irbesartan is absorbed well after oral administration and its absolute bioavailability is about 60-80%. Eating does not significantly affect its bioavailability. Irbesartan's plasma protein binding rate is about 96%, so it hardly binds to blood cells, and its distribution volume is 53-93 liters^(9, 10). Irbesartan is metabolized in the liver by oxidative conjugation with glucuronic acid. Irbesartan and its metabolites are excreted by the biliary tract and the kidneys. When irbesartan is given orally or intravenously, about 20% of the radioactivity can be recovered in urine and the rest is excreted in feces. Less than 2% of the dose is excreted in the urine in prototype. Irbesartan has good safety during treatment. There is no significant change in the pharmacokinetic parameters of irbesartan in patients with renal impairment or on hemodialysis. The pharmacokinetic parameters of irbesartan do not change significantly in patients with mild to moderate cirrhosis. The use of irbesartan for the treatment of essential hypertension has been well recognized, and generally satisfactory results can be achieved⁽¹¹⁾. In addition, essential hypertension is a common clinical disease, which is mainly controlled by rational drug use and healthy living habits at present. Patients' self-management and nursing consciousness are the key factors for the further development of the disease.

Therefore, patients need to strengthen self-management during clinical care. High-quality nursing is a new clinical nursing concept, which focuses on patients as the center of the disease, and provides comprehensive nursing measures

to patients based on their basic conditions. The patients in the study group were given exercise care, psychological care, cognitive management, diet management, scientific implementation of nursing services so that they have better control of blood pressure, a higher level of nursing satisfaction, quality of life. Therefore, during clinical nursing, the implementation of quality care for patients with essential hypertension can enhance the therapeutic effect.

Conclusion

In conclusion, nifedipine has an ideal effect in the treatment of essential hypertension, which can properly control the blood pressure of patients and improve the recovery speed and quality of life of patients. Therefore, it is recommended to promote the use of nifedipine in clinical practice. In order to make patients get better results, a high-quality nursing service mode can be adopted to help patients form healthy living habits, enhance self-management awareness, and assist patients to better control the blood pressure level in their daily life.

References

- 1) Li S, Lu YB, Zhang L, Yang JX, Zhang DH. Clinical effect analysis of midafternoon stream low-frequency acupoint opening method combined with irbesartan in the treatment of essential hypertension. *Medical Recapitulate* 2016; 22(03): 620-622.
- 2) Zou JY. Clinical effect of Irbesartan combined with conventional calcium antagonist + β blocker in the treatment of hypertensive renal failure and its effect on renal function. *Medical Innovation of China* 2016; 13(24): 34-37.
- 3) Xiao L, Xie AX, Wu SX. Application effect of humanized nursing management in patients with essential hypertension. *China Modern Medicine* 2018; 25(27): 201-203.
- 4) Abel T, Daniel MB, Lemma N. Adherence to recommended lifestyle modifications and factors associated for hypertensive patients attending chronic follow-up units of selected public hospitals in Addis Ababa, Ethiopia. *Patient Preference and Adherence* 2017; 12(34): 110-115.
- 5) Tuoyo MA, Michael B, Anthony A, Rasaaq A. Prognostic indices among hypertensive heart failure patients in Nigeria: the roles of 24-hour Holter electrocardiography and 6-minute walk test. *Vascular Health and Risk Management* 2017; 10(21): 145-150.

- 6) Bekele T, Dessalegn H, Benalfew L, Tefera B, Temamen T, Habtamu A. Uncontrolled hypertension and associated factors among adult hypertensive patients on follow-up at Jimma University Teaching and Specialized Hospital: cross-sectional study. *Research Reports in Clinical Cardiology* 2017; 12(09): 234-239.
- 7) He L. Effect analysis of community nursing comprehensive intervention on patients with essential hypertension. *Chinese Journal of Modern Drug Application* 2018; 12(23): 132-134.
- 8) Zhang H. Effect of comprehensive nursing intervention on mental state and medication compliance of patients with essential hypertension. *Modern Chinese Doctor* 2019; 57(08): 151-153.
- 9) Wang X, Wang F, Chen MZ, Wang XN, Zheng J, Qin AM. Twenty-four-hour systolic blood pressure variability and renal function decline in elderly male hypertensive patients with well-controlled blood pressure. *Clinical Interventions in Aging* 2018; 20(78): 90-96.
- 10) Ioan T, Dorina P, Septimiu V, Elena A, Andreea V. Treatment adherence among adult hypertensive patients: A cross-sectional retrospective study in primary care in Romania. *Patient Preference and Adherence* 2018; 11(46): 300-306.
- 11) Gao W, Senel M, Yel G, Baskonus HM, Senel B. New complex wave patterns to the electrical transmission line model arising in network system. *AIMS Mathematics* 2020, 5(3): 1881-1892.

Corresponding Author:

XINLEI MA

Email: maxinlei_8421@126.com

(China)