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Practice analysis of statins combined with cardiovascular drugs in the treatment of coronary heart disease

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ABSTRACT. *[Objective] To analyze the practice of statins combined with cardiovascular drugs in the treatment of coronary heart disease. [Methods] 110 patients with coronary heart disease admitted to our hospital from February 2018 to December 2019 were selected as the research objects, and they were divided into the control group and the treatment group according to the random number table method. The control group was treated with conventional cardiovascular drugs, and the treatment group was treated with statins on this basis, and the clinical treatment effects of the two groups were compared. [Results] After treatment, the improvement of plaque area, blood lipids, carotid artery intima-media thickness and brachial artery blood flow-mediated diastolic function in the treatment group was better than that of the control group, and the total effective rate was significantly better than that of the control group(P<0.05). [Conclusion] Statins combined with cardiovascular drugs have clinical promotion value for coronary heart disease.*

KEYWORDS: *Statins; Coronary Heart Disease; Clinical Efficacy*

1. Introduction

Coronary heart disease is a common cardiovascular disease, also known as coronary atherosclerotic heart disease. It is more likely to occur in middle-aged and elderly people. It usually has a rapid onset and may be life-threatening in severe cases [1]. As my country's population aging accelerates, the prevalence of cardiovascular diseases will increase significantly. The 2018 China Cardiovascular Disease Report survey shows that there are 290 million patients with cardiovascular diseases in the country, that is, 1 in 5 adults suffers from cardiovascular diseases [2]. At present, its pathogenesis is not clear, but studies have found that coronary heart disease may be related to various factors such as dyslipidemia, obesity, hypertension and abnormal platelet function. When patients have hyperlipidemia, there is too much fat in their blood vessels, which easily leads to impediment of blood flow, blood vessel obstruction, and eventually myocardial ischemia or hypoxia. Therefore, blood lipid levels are used as one of the observation indicators of cardiovascular disease.

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In the clinical treatment of coronary heart disease, cardiovascular drugs such as aspirin and calcium antagonists are mostly chosen. However, many patients still have low-density lipoprotein cholesterol (LDL-C) levels below the target value after taking larger doses of cardiovascular drugs. The compliance rate of patients with high-risk and very high-risk cardiovascular diseases is still low, so more effective measures are needed to intervene in dyslipidemia [3].

In recent years, studies have found that statins have a good effect in the treatment of coronary heart disease and can effectively reduce the level of patients with dyslipidemia. Statins have various effects such as inhibiting the proliferation of vascular smooth muscle cells, improving the function of vascular endothelial cells, enhancing fibrinolytic activity, stabilizing atherosclerotic plaques, and inhibiting inflammation, thereby significantly reducing cardiovascular and cerebrovascular events in patients with atherosclerosis. Therefore, this article explores whether the combined application of statins can further improve the therapeutic effect of coronary heart disease and provide support for clinical practice.

2 Materials and methods

2.1 General information

In this study, 110 patients with coronary heart disease admitted to our hospital from February 2018 to December 2019 were selected as the research object. The disease diagnosis criteria refer to the specific diagnostic criteria for coronary heart disease in “Practical Internal Medicine”. All patients had typical symptoms or a history of myocardial infarction. Coronary angiography showed that the degree of arterial stenosis was >50%, and echocardiography showed the dynamic evolution of ST-T or abnormal ventricular wall motion in the ischemic zone. The research object exclude statins allergy, liver disease, severe liver and kidney insufficiency, regular dialysis, severe heart insufficiency or cardiogenic shock, hypothyroidism, connective tissue disease, myopathy, malignant tumors, and the recent 3 months patients undergoing major surgery. According to the random number table method, 110 patients were divided into a control group and a treatment group with 55 cases each. Among the 55 patients in the control group, 30 were males and 25 were females; they were 51-82 years old, with an average of (50.8±2.1) years old; the course of disease was 4 to 26 years, with an average of (11.5±1.4) years. Among the 55 patients in the treatment group, 31 were males and 24 were females; they were 49-81 years old, with an average of (52.3±1.9) years old; the course of disease was 3-24 years, with an average of (11.6±1.5) years. There was no statistically significant difference in general data such as gender, age, and course of disease between the two groups ($P>0.05$).

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2.2 Mode of administration

The control group was treated with conventional cardiovascular drugs, mainly nicardipine hydrochloride tablets (National Medicine Zhunzi H13023178, Yaodu Pharmaceutical Group Co., Ltd.) 20mg/time, 2~3 times/d. Aspirin enteric-coated tablets (National Medicine Standard H20065051, Shenyang Aojina Pharmaceutical Co., Ltd.) 1~2 tablets/d.Nitroglycerin tablets (National Medicine Standard H11021022, Beijing Yimin Pharmaceutical Co., Ltd.) 2~3 tablets/d. Nitrate drugs, metoprolol tartrate tablets (National Medicine Standard H32025391, AstraZeneca Pharmaceutical Co., Ltd.) 2~3 tablets/time, 2 times/d. On this basis, the treatment group was treated with statins, taking simvastatin (National Medicine Standard J20090001, Hangzhou Merck Pharmaceutical Co., Ltd.) 20 mg/time, 1 to 2 times/d. Patients in both groups were treated for 2 months.

2.3 Detection method

Blood was collected for testing of total triglyceride cholesterol, high-density lipoprotein cholesterol and low-density lipoprotein cholesterol, which were detected by Hitachi 7600-210 automatic biochemical analyzer. The GE vivid color Doppler ultrasound system was used to detect the vasodilation function mediated by blood flow of the arterial artery, and the change of the inner diameter of the brachial artery after reactive hyperemia represents the endothelium-dependent vasodilation function of the fatty artery. Carotid artery ultrasound was performed with ALOKAα10 color Doppler ultrasound system to detect the inner diameter of the tube wall, and the two sides were measured 3 times, and the average value was taken. In this study, atheroma was defined as CIMT value $\geqslant$ 1.5mm.The calculation method of plaque area: the maximum area of the horizontal axis and the vertical axis of the plaque was measured at the carotid artery plaque using area tracing method.

2.4 Efficacy evaluation

Markedly effective: The number of angina pectoris in patients is significantly less, and the dosage of nitroglycerin is reduced by more than 80% compared with before treatment. Effective: The number of episodes of angina pectoris is slightly reduced, and the dosage of nitroglycerin is reduced by 50%~80% compared with before treatment. Invalid :The patient has not any significant improvement after treatment. SPSS 17.0 software was used to perform statistical analysis on the obtained data. The measurement data was expressed as ($x\pm s$). The data difference before and after treatment in the group was analyzed by *t* test. The difference in data between the treatment groups was analyzed by variance analysis, $p<0.05$ indicates that the difference is statistically significant.

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3 Result

3.1 Comparison of flow-mediated diastolic function before and after treatment in the two groups

Before treatment, there was no difference in flow-mediated diastolic function (FMD)between the two groups. As shown in Table 1, after treatment, the FMD of the control group increased from (4.30%±1.16%) to (5.76%±1.43%), and the FMD of the treatment group increased from (4.64%±1.29) to (8.95%±2.13%). After treatment, the FMD of the two groups was significantly improved (P<0.01). And the improvement in the treatment group was more obvious (P<0.01).

Table1. Comparison of FMD in the two groups

	therapy group	Control group
Before treatment	4.64%±1.29	4.30%±1.16%
After treatment	8.95%±2.13%	5.76%±1.43%
P value	0.0043	0.0089

3.2 Comparison of carotid intima-media thickness and carotid artery diameter before and after treatment between the two groups

Before treatment, there was no significant difference in carotid intima-media thickness (CIMT) and carotid artery diameter between the two groups.After treatment, the CIMT value of the control group decreased from (1.16±0.08) mm to (1.12±0.09) mm, and the CIMT value of the treatment group decreased from (1.24±0.10) mm to (1.06±0.07) mm. Compared with before treatment, CIMT decreased significantly after treatment in the two groups (P<0.01). Comparing the two groups after treatment, the decrease in the treatment group was more significant (P<0.01) (Table 2). After treatment, the inner diameter of the carotid artery in the control group decreased from (5.97±0.30) mm to (5.82±0.18) mm, and the inner diameter of the carotid artery in the treatment group decreased from (6.05±0.31) mm to (5.88±0.29) mm. Compared with before treatment, the carotid artery diameter decreased in the two groups after treatment, but the difference was not statistically significant (P>0.05) (Table 2).

Table2. Comparison of CIMT and carotid artery diameter in the two groups

	CIMT(mm)		Carotid artery diameter(mm)	
	Therapy group	Control group	Therapy group	Control group
Before treatment	1.24±0.10	1.16±0.08	6.05±0.31	5.97±0.30
After treatment	1.06±0.07	1.12±0.09	5.88±0.29	5.82±0.18
P value	0.0027	0.0058	0.0031	0.0068

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3.3 Comparison of carotid plaque area before and after treatment in the two groups

There was no significant difference in the horizontal and vertical axis areas of carotid plaque between the two groups before treatment. After treatment, the horizontal axis area of carotid plaque in the control group decreased from (0.23±0.05) cm^2 to (0.21±0.04) cm^2, and the longitudinal area of carotid plaque decreased from (0.44±0.17) cm^2 to (0.41±0.15) cm^2. In the treatment group, the horizontal axis area of carotid artery plaque decreased from (0.24±0.06) cm^2 to (0.21±0.07) cm^2, and the longitudinal axis area of carotid artery plaque decreased from (0.45±0.11) cm^2 to (0.40±0.12) cm^2. After treatment, the carotid plaque area of the two groups decreased compared with before treatment ($P<0.05$), but there was no significant difference in the horizontal and vertical axis areas of carotid plaque between the two groups after treatment ($P>0.05$) (see Table 3)

Table3. Comparison of carotid plaque area in the two groups

	Patch area (Vertical axis, cm^2)		Patch area (Horizontal axis,cm^2)	
	Therapy group	Control group	Therapy group	Control group
Before treatment	0.24±0.06	0.23±0.05	0.45±0.11	0.44±0.17
After treatment	0.20±0.07	0.21±0.04	0.40±0.12	0.41±0.15
P value	0.0038	0.0072	0.0029	0.0082

3.4 Comparison of the improvement of blood lipids before and after treatment between the two groups

There was no significant difference in the improvement of blood lipids between the two groups before and after treatment ($P>0.05$); the blood lipid indexes TC, TG, HDL-C and LDL-C of the treatment group after treatment were significantly lower than those before treatment and the control group. The differences were statistically significant ($P<0.05$), see Table 4.

Table4. Comparison of improvement of blood lipids in the two groups (mmol/L)

		TC	TG	HDL-C	LDL-C
Therapy group	Before treatment	5.22±0.71	1.98±0.22	3.15±1.27	3.66±1.52
	After treatment	4.88±0.53	1.35±0.18	2.54±1.08	2.95±1.02
Control group	Before treatment	5.02±0.60	2.05±0.30	3.33±1.28	3.70±1.82
	After treatment	4.95±0.58	1.92±0.28	3.01±1.15	3.45±1.68

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3.5 Comparison of clinical efficacy between the two groups

The total effective rate of the treatment group was significantly better than that of the control group, and the difference was statistically significant (P<0.05), see Table 5.

Table5. Comparison of clinical efficacy in the two groups

	Markedly effective	in effect	invalid	Total effective rate
Therapy group	30	22	3	94.54%
Control group	18	25	12	78.18%

4.discussion

With the development of my country's social economy and the improvement of people's living standards, the incidence of coronary heart disease has shown an upward trend year by year. Therefore, strengthening the summary and research on the prevention and treatment of coronary heart disease is of important clinical research significance ， it is must be highly valued by relevant medical staff. In the clinical treatment of patients with coronary heart disease, whether the patient's clinical manifestations are angina or myocardial infarction, the treatment measures are mainly to relieve coronary artery obstruction. Although the effect of surgical treatment is relatively satisfactory, it is difficult for ordinary patients to bear due to the high cost of treatment. At present, the commonly used treatment method is to take cardiovascular drugs, such as calcium antagonists, aspirin, nitrate drugs, but the clinical treatment effect is moderate. Statins were developed by Japanese medical scientist Endo, who extracted mevastatin from fungal cultures, which was the world's first statin [4]. Clinical applications have found that statins can lower LDL and promote plaque stability. American medical scientists have conducted a large-scale clinical trial and collected more than 10,000 cases. It is finally confirmed that statins have important preventive and therapeutic value for coronary heart disease [5].

The results of this study show that statins combined with cardiovascular drugs have an ideal curative effect, which can significantly reduce plaque area, lower blood lipids, improve carotid artery intima-media thickness and blood flow-mediated diastolic function, and have a high safety. In the follow-up after treatment, the patients in the treatment group had fewer adverse reactions and side effects. Only some patients reported mild gastrointestinal discomfort or slightly elevated transaminase. The main reason was that the drug worked in the human liver. If you insist on taking the medicine, the above symptoms will recover on your own. In addition, it should be noted that the dosage of statins must be strictly controlled. In the case of low-dose application, the patient's liver and kidney function, heart rate, and blood pressure are relatively stable. There are no professional materials or data on the adverse reactions caused by the application of high-dose statins, but it is

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necessary to pay attention to the reasonable dosage in clinical administration to avoid serious impact on patients.

To sum up, in the clinical treatment of patients with coronary heart disease, statins not only have the effect of regulating lipids, but also can maintain the stability of plaques, improve hemorheology, inhibit the proliferation of vascular smooth muscle cells, and antagonize inflammatory responses. Compared with the use of cardiovascular drugs alone, its clinical effects are more significant. It can be seen that in the clinical treatment of patients with coronary heart disease, statins combined with cardiovascular drugs have ideal curative effects, which is worthy of further promotion and application in the clinic.

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