Study on the Effect of Cardiac Rehabilitation Nursing after Coronary Heart Disease Interventional Therapy

Yuanyuan Lu[1], Zhangying Li [2], Jingjing Wang[2]*

[1]Intensive Care Unit of Cardiovascular Medicine, Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China
[2]Third Ward of Department of Respiratory and Critical Care Medicine, Affiliated Hospital of Hebei University, Baoding 071000, Hebei Province, China

Corresponding author: Jingjing Wang, 371335920@qq.com

Abstract: *Objective:* To study the effect of cardiac rehabilitation nursing after coronary heart disease interventional therapy. *Methods:* 80 patients with coronary heart disease who underwent interventional treatment from January 2024 to August 2024 were selected as experimental subjects and randomly divided into 40 cases in each group. The patients in the Kanghu group received cardiac rehabilitation care after interventional treatment, and the patients in the relative group received clinical routine care after interventional treatment. Cardiac function indicators, 6-minute walking distance, quality of life, incidence of adverse cardiovascular events, and nursing satisfaction were compared and analyzed. *Results:* Before nursing, there was little difference in cardiac function indicators between groups and no statistical significance ($P > 0.05$); after nursing, the cardiac function indicators between groups were optimized, and the cardiac function indicators in the Kanghu group were better than those in the relative group, which was statistically significant ($P < 0.05$). Before surgery, the 6-minute walking distance between the groups was similar, which was not statistically significant ($P > 0.05$); after surgery, the 6-minute walking distance between the groups increased, and the 6-minute walking distance in the Kangwu group was longer than that in the relative group, which was statistically significant ($P < 0.05$). There was a large difference in the quality of life scores between the groups, and the quality of life score in the Kangwu group was higher than that in the relative group, which was statistically significant ($P < 0.05$). The incidence of adverse events in the Kangwu group was lower than that in the relative group, and the difference was statistically significant ($P < 0.05$). *Conclusion:* The effect of receiving cardiac rehabilitation care after interventional treatment for coronary heart disease is ideal, which is helpful to strengthen the cardiac function of patients and speed up the recovery speed.

Keywords: Coronary heart disease; Interventional treatment; Cardiac rehabilitation care; Incidence

1. Introduction

Coronary heart disease, as one of the typical clinical heart diseases, is commonly seen in middle-aged and elderly people and has a very high incidence rate. Without timely intervention, it can lead to exacerbation of the disease, triggering symptoms such as heart failure and heart rupture, which can endanger the patient's life. Nowadays, interventional therapy has become the main treatment for patients with coronary heart disease, which can improve myocardial blood perfusion, reduce myocardial ischemia, and avoid an increase in the scope of infarction [1]. To promote early recovery of patients with coronary heart disease, postoperative intervention is particularly important. Reports have clearly stated that the effect of cardiac rehabilitation nursing after interventional therapy for coronary heart disease is very prominent, which can not only strengthen heart function but also reduce adverse cardiovascular events [2,3]. To verify this, this article specifically selects 80 patients with coronary heart disease who underwent interventional therapy from January 2024 to August 2024 as experimental subjects. We will compare and analyze heart function indicators, 6-minute walking distance, quality of life, incidence of adverse cardiovascular events, and nursing satisfaction between patients receiving cardiac rehabilitation nursing and clinical routine nursing after interventional therapy.

2. Materials and methods

2.1. Basic information

80 patients with coronary heart disease who underwent interventional therapy from January 2024 to August 2024 were selected as experimental subjects and randomly divided into two groups, with 40 patients in every group. The rehabilitation group received cardiac rehabilitation nursing after interventional therapy, while the control group received clinical routine nursing. The rehabilitation group consisted of 22 male patients and 18 female patients, aged between 50 and 74 years, with an average age of (62.37 ± 1.06) years old. The control group consisted of 23 male patients and 17 female patients, aged between 51 and 75 years old, with an average age of (62.06 ± 1.54) years old. The basic information of the study subjects showed little difference and was comparable $(P > 0.05)$. Inclusion criteria: Approved by the ethics committee, the subjects met the "Guidelines for the Diagnosis of Coronary Heart Disease" [4], were diagnosed by imaging examination, and agreed to participate in the experiment after being informed of its content. Exclusion criteria: Patients with infectious diseases, immune diseases, unconsciousness, mental abnormalities, or cancer [5,6].

2.2. Methods

The control group implemented basic clinical nursing methods, instructing patients to remain bedridden for 24 hours after surgery, avoiding strenuous activities, advising patients to drink more water, eat scientifically, and monitor wound conditions. After the vital signs stabilized completely, patients were guided to perform rehabilitation exercises, following the principle of gradual progress and developing a rehabilitation plan based on patient tolerance.

The rehabilitation group implemented cardiac rehabilitation nursing methods. After implementing the basic clinical nursing methods, cardiac rehabilitation intervention was carried out, including the following:

(1) On the day of surgery, patients were instructed to maintain a supine position for 6–8 hours after surgery. After the wound had completely stopped bleeding, patients were helped with sitting up and turning over training. If patients felt discomfort during training, they were guided to walk slowly along the bedside. If the pain was unbearable, patients were guided to perform bed activities with reduced training intensity to ensure stable breathing.

(2) On the day after surgery, patients were guided to perform bed exercises such as turning over and sitting up independently, as well as simple resistance activities like squeezing a ball or stretching elastic bands, gradually increasing activity volume and intensity. In addition, patients were instructed on proper breathing techniques, maintaining a deep inhalation and slow exhalation rhythm to prevent breathing difficulties during training. If patients felt discomfort during training, the frequency was reduced or stopped.

(3) 3–4 days after surgery, patients were guided to perform standing, squatting, and walking exercises. Nursing staff provided assistance to ensure patient safety, ensuring gentle movements to prevent affecting the patient's emotions and breathing. Patients walked about 100 meters along the ward, paying attention to moderate exercise to avoid negative effects.

(4) 5–7 days after surgery, training difficulty was appropriately increased based on the patient's physical condition, extending walking distance and increasing walking speed. However, it was necessary to maintain a stable heart rate during training and stop immediately if discomfort occurred. Additionally, the training location could be shifted from indoors to outdoors, such as adding stair climbing training, and adjusting the training plan based on the physical condition of patients.

(5) Before discharge, patients were guided to adjust training content based on heart rate changes. If discomfort occurred during early training, exercise volume was reduced, and then frequency was appropriately increased. If the heart rate increased by 15 beats per minute during early training, the later training volume remained the same as before.

2.3. Evaluation criteria

(1) Cardiac function indicators LVESD, LVEF, and LVEDD (left ventricular end-diastolic diameter, left ventricular ejection fraction, left ventricular end-systolic diameter) were evaluated using transthoracic echocardiography [7].

(2) The 6-minute walk test assessment criteria were used, with a distance > 425 m representing mild cardiopulmonary insufficiency; a distance < 150 m representing severe cardiopulmonary insufficiency; and a distance between the two representing moderate cardiopulmonary insufficiency [8].

(3) The quality of life was assessed applying the sf-36 scoring scale, which included 8 items involving MH, RE, SF, VT, RP, BP, PF, and CH. The total score for each item was 100, and the score was directly proportional to the quality of life [9].

(4) The occurrence of adverse cardiovascular events was observed and recorded, with an incidence rate calculated as the number of occurrences divided by the total number of cases, multiplied by 100%.

2.4. Statistical methods

SPSS 26.0 statistical software was used. Count data were expressed as (n, %) and tested using the chi-square test. Measurement data were expressed as mean ± standard deviation (SD) and tested using the t-test. The test criterion was $P < 0.05$, indicating statistical significance between groups.

3. Results

3.1. Comparison of cardiac function indicators between the rehabilitation group and the control group

Before nursing, there was a small difference in cardiac function indicators between groups, which was not

statistically significant ($P > 0.05$). After nursing, cardiac function indicators were optimized in both groups, with the rehabilitation group showing better cardiac function indicators than the control group, which was statistically significant ($P < 0.05$). See **Table 1**.

Table 1. Comparison of cardiac function indicators between the rehabilitation group and the control group (mean ± SD)

Groups (n)	LVESD (mm)		LVEF (%)		LVEDD (mm)	
	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Rehabilitation group ($n = 65$)	48.37 ± 2.38	35.45 ± 3.53	46.37 ± 5.22	65.46 ± 6.44	63.47 ± 2.24	40.44 ± 4.56
Control group ($n = 65$)	48.28 ± 2.56	39.27 ± 4.27	46.36 ± 5.84	54.11 ± 5.36	63.33 ± 2.35	45.55 ± 4.11
t-value	0.456	6.067	0.535	5.657	0.503	7.067
p-value	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05

3.2. Comparison of 6-minute walking distance between the rehabilitation group and the control group

Before surgery, the 6-minute walking distance was similar between the groups, with no statistical significance ($P > 0.05$). After surgery, the 6-minute walking distance increased in both groups, with the rehabilitation group having a longer 6-minute walking distance than the control group, which was statistically significant ($P < 0.05$). See **Table 2**.

Table 2. Comparison of 6-minute walking distance between the rehabilitation group and the control group (mean ± SD, meters)

Groups (n)	1 day before surgery	1 week after surgery	2 weeks before surgery	4 weeks after surgery
Rehabilitation group ($n = 65$)	218.34 ± 34.37	440.36 ± 20.54	482.46 ± 18.56	532.56 ± 18.51
Control group ($n = 65$)	221.16 ± 30.14	230.17 ± 22.17	421.23 ± 20.42	482.22 ± 19.27
t-value	0.921	35.055	13.408	9.543
p-value	> 0.05	< 0.05	< 0.05	< 0.05

3.3. Comparison of quality of life between the rehabilitation group and the control group

There was a significant difference in the quality of life scores between the groups. The quality of life scores in the rehabilitation group were higher than those in the control group, which was statistically significant ($P < 0.05$). See **Table 3**.

Table 3. Comparison of quality of life between the rehabilitation group and the control group (mean ± SD, points)

Groups (n)	Physiological function (PF)	Role physical (RP)	Bodily pain (BP)	Vitality (VT)	Mental health (MH)	Role emotional (RE)	Social functioning (SF)	General health (CH)
Rehabilitation group ($n = 65$)	92.58 ± 3.38	93.25 ± 3.65	93.72 ± 3.38	92.83 ± 3.17	93.49 ± 3.49	92.17 ± 3.04	93.38 ± 3.28	95.61 ± 3.12
Control group ($n = 65$)	80.42 ± 2.17	82.47 ± 2.54	80.81 ± 2.67	83.36 ± 2.28	82.22 ± 2.65	81.67 ± 2.87	85.49 ± 2.15	83.38 ± 2.37
t-value	6.185	5.295	7.142	5.286	6.037	5.284	7.596	6.097
p-value	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

3.4. Comparison of the incidence of adverse events between the rehabilitation group and the control group

The incidence of adverse events in the rehabilitation group was lower than that in the control group, and the difference was statistically significant ($P < 0.05$). See **Table 4**.

Table 4. Comparison of the incidence of adverse events between the rehabilitation group and the control group [cases (%)]

Groups (*n*)	Arrhythmia	Myocardial infarction	Angina pectoris	Repeat revascularization	Total
Rehabilitation group (*n* = 65)	0	0	0	1	1 (2.50)
Control group (*n* = 65)	2	1	1	2	6 (15.00)
χ^2-value	6.381				
p-value	< 0.05				

4. Discussion

Shortness of breath and chest pain are the main symptoms of patients with coronary heart disease, accompanied by sweating, vomiting, and other symptoms, which affect health and lead to a decrease in quality of life [10]. Interventional therapy can achieve revascularization, improve myocardial blood supply, and ensure smooth blood flow, thereby reducing symptoms and accelerating the recovery of heart function. However, due to factors such as pain and prolonged bed rest after surgery, the recovery of heart function is not ideal, so cardiac rehabilitation nursing is required [11,12].

The advantages of cardiac rehabilitation nursing are very significant, which can not only strengthen heart function but also promote patients to return to normal life early. By guiding patients to perform passive training on the bed and independent activities off the bed, patients can quickly recover their physical strength after interventional therapy, promoting further strengthening of exercise endurance and improving their heart function. Additionally, adjusting the activity frequency and activity level based on changes in the patient's heart rate during training can effectively lessen the incidence of adverse cardiovascular events, promote better recovery of the patient's bodily functions, and enhance the quality of life. The experimental results are as follows: Before nursing, there was little difference in cardiac function indicators between groups; after nursing, cardiac function indicators were optimized in both groups, with the rehabilitation group showing better cardiac function indicators than the control group. Before surgery, the 6-minute walking distance was similar between groups; after surgery, the 6-minute walking distance increased in both groups, with the rehabilitation group having a longer 6-minute walking distance than the control group. There was a significant difference in quality of life scores between groups, with the rehabilitation group scoring higher than the control group; the incidence of adverse events was lower in the rehabilitation group compared to the control group. These findings are consistent with the research conclusions of many scholars such as Zhou [13], Wu [14], Wang [15], etc., which fully verifies the significance of conducting this experimental study.

5. Conclusion

In summary, the effect of receiving cardiac rehabilitation nursing after interventional therapy for coronary heart

disease is ideal, which helps to strengthen patients' heart function and accelerate recovery, and is worthy of promotion.

Disclosure statement

The authors declare no conflict of interest.

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