Analysis of the Effectiveness of Clopidogrel Combined with Aspirin in the Treatment of Coronary Heart Disease in Community-Dwelling Elderly

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Abstract: *Objective:* To analyze the combined therapeutic effect of clopidogrel (CLO) and aspirin (ASP) on coronary heart disease (CHD) in community-dwelling elderly. *Methods:* Thirty elderly patients with CHD who were admitted to the Xinxin Community Health Service Station, Pangzhuang Street, Quanshan District, Xuzhou City, from November 2020 to November 2022 were selected and randomly grouped into an observation group and a control group, with 15 cases in each group. The observation group was given the combination of CLO and ASP and the reference group was given only ASP. The total effective rate and other treatment indicators between the two groups were compared. *Results:* The total effective rate of the observation group (93.33%) was higher than that of the reference group (60.00%) ($P < 0.05$). The adverse drug reaction rate (13.33%) and long-term cardiovascular adverse event rate (6.67%) of the observation group were lower than those of the reference group at 46.67% and 40.00% respectively, ($P < 0.05$). Before treatment, the two groups had no difference in the quality-of-life scores ($P > 0.05$). After treatment, the quality-of-life scores of the observation group were higher than those of the reference group ($P < 0.05$). *Conclusion:* CLO combined with ASP improved the therapeutic effect of community-dwelling elderly patients with CHD, reduced adverse reactions during medication, prevented adverse cardiovascular events, and comprehensively improved the patient's quality of life.

Keywords: Clopidogrel; Aspirin; Coronary heart disease in the elderly in the community; Adverse reactions; Quality of life

1. Introduction

Coronary heart disease (CHD) is the main cause of sudden death or cardiovascular events among the elderly. Its pathogenesis is characterized by an obstruction or spasm of the coronary arteries, leading to hypoxia and ischemia in the myocardial tissue, causing local myocardial infarction, resulting in palpitations or symptoms such as angina pectoris. Conventional treatments for this disease include diet control, correction of bad habits,

etc., combined with drug intervention. Elderly CHD patients mostly receive community treatment and are required to frequent community health service stations for regular check-ups to monitor for changes in their disease and rationally adjust their medication regimen [1]. Aspirin (ASP) is a commonly used drug in the community treatment of CHD, mainly to prevent platelet aggregation, prevent and treat myocardial ischemia, and improve the patient's prognosis. When combined with clopidogrel (CLO), it can improve antiplatelet efficiency, exert anticoagulant effects, and relieve symptoms of angina pectoris. Moreover, combining the two drugs demonstrates different inhibitory pathways for platelet activity and can effectively exert a synergistic effect, thereby improving the treatment's efficacy. This study included 30 community-dwelling elderly patients with CHD to evaluate the therapeutic efficacy of CLO combined with ASP in the treatment of CHD.

2. Materials and methods

2.1. Basic information

Thirty community-dwelling elderly patients with CHD who were admitted to the Xinxin Community Health Service Station, Pangzhuang Street, Quanshan District, Xuzhou City, from November 2020 to November 2022 were selected and randomly divided into an observation group and a control group, with 15 cases in each group. The observation group consisted of 9 males and 6 females aged 62–89 years old, with an average age of 69.86 ± 2.48 years. The disease duration ranged from 0.7–12 years, with an average of 6.08 ± 1.27 years. The control group consisted of 10 males and 5 females aged 63–88 years old, with an average age of 69.97 ± 2.51 years. The disease duration ranged from 0.6–13 years, with an average of 6.17 ± 1.31 years. Data between the two groups were comparable ($P < 0.05$).

Inclusion criteria: (1) Patients were diagnosed with CHD based on the guidelines formulated by Modern Cardiology; (2) patients with symptoms such as rest pain; (3) patients who meet the indications for medication; (4) consented. Exclusion criteria: (1) Patients who received anticoagulant therapy in the past 6 months; (2) those with confirmed heart failure and myocardial infarction; (3) allergic to study drugs; (4) abnormal liver and kidney function; (5) those with serious infections.

2.2. Method

Both groups received symptomatic treatment such as crown expansion, lipid regulation, and blood pressure reduction, and their diet and work schedules were standardized. The control group was given ASP treatment. The drug used was aspirin enteric-coated tablets and the dosage was set at 100 mg each time. The drug was taken 3 times a day with warm water for 3 consecutive months. The observation group was given CLO combined with ASP for treatment, and the medication method of ASP was the same as above. The drug type of CLO used was clopidogrel hydrogen sulfate. Each dose was set at 50–75 mg. The drug was taken once a day with warm water and taken continuously for 3 months.

2.3. Observation indicators

The total effectiveness of the treatment was evaluated through phone calls or WeChat follow-ups. The efficacy was said to be "significant" when the angina pectoris attacks (duration and frequency) improved by more than 80%, and there were no other symptoms. The efficacy was said to be "preliminary" when the angina pectoris attacks and other mild symptoms improved by 50%–80%. The efficacy was said to have "no effect" when the angina pectoris attacks improved by less than 50% and other serious symptoms were still present. Adverse reactions: During the medication period, the patient was asked for signs of adverse reactions through phone calls, namely signs of rash, headache, nausea, and gastric mucosal bleeding. After 3 months of consuming

the drug, the patients were followed up on the occurrence of adverse events by phone or WeChat, namely for the occurrence of atrial fibrillation, myocardial infarction, heart failure, and ventricular fibrillation. Before treatment, the Seattle Angina Questionnaire (SAQ) was distributed to the patients to assess their quality of life. After 3 months of treatment, the scale was again sent via WeChat, and relevant matters for filling out the scale were. The scale included items like angina stability, physical activity limitation, angina attack, treatment satisfaction, and disease awareness. Each item was 100 points, and the quality of life was positively correlated to the SAQ score.

2.4. Statistical analysis

Statistical analysis was carried out using the SPSS 21.0 software. Measurement data were expressed as mean ± standard deviation and compared using a t-test. Count data were expressed as % and analyzed using the chi-squared (χ^2) test. Results were considered statistically significant at $P < 0.05$.

3. Results

3.1. Comparison of the total treatment effectiveness of the two groups

As shown in **Table 1**, the total effective rate of the observation group was higher than that of the control group ($P < 0.05$).

Table 1. Comparison of the total treatment effective rates between the two groups [n (%)]

Group	Cases, n	Significant efficacy	Preliminary efficacy	No effect	Total efficacy
Observation group	15	8 (53.33)	6 (40.00)	1 (6.67)	93.33 (14/15)
Control group	15	6 (40.00)	3 (20.00)	6 (40.00)	60.00 (9/15)
χ^2	-	-	-	-	4.658
P	-	-	-	-	0.031

3.2. Comparison of adverse reaction rates between the two groups

As shown in **Table 2**, the adverse reaction rate of the observation group was lower than that of the reference group ($P < 0.05$).

Table 2. Comparison of adverse reaction rates between the two groups [n (%)]

Group	Cases, n	Adverse reactions				
		Rash	Headache	Nausea	Gastric mucosal bleeding	Incidence
Observation group	15	0	1 (6.67)	1 (6.67)	0	13.33 (2/15)
Control group	15	1 (6.67)	2 (13.33)	3 (20.00)	1 (6.67)	46.67 (7/15)
χ^2	-	-	-	-	-	3.968
P	-	-	-	-	-	0.046

3.3. Comparison of long-term cardiovascular adverse event rates between the two groups

As shown in **Table 3**, the observation group's long-term cardiovascular adverse event rate was lower than that of the control group ($P < 0.05$).

Table 3. Comparison of long-term adverse cardiovascular event rates between the two groups [n (%)]

Group	Cases, n	Atrial fibrillation	Myocardial infarction	Heart failure	Ventricular fibrillation	Incidence
			Adverse cardiovascular events			
Observation group	15	0	0	0	1 (6.67)	6.67 (1/15)
Control group	15	1 (6.67)	2 (13.33)	1 (6.67)	2 (13.33)	40.00 (6/15)
χ^2	-	-	-	-	-	4.658
P	-	-	-	-	-	0.031

3.4. Comparison of quality-of-life scores between the two groups

As shown in **Table 4**, before treatment, the two groups had no difference in the quality-of-life scores ($P > 0.05$). After treatment, the quality-of-life scores of the observation group were higher than those of the control group ($P < 0.05$).

Table 4. Comparison of quality-of-life scores between the two groups before and after treatment (mean ± standard deviation /min)

Group	Cases, n	Angina stability		Limited physical activity		Angina attack		Treatment satisfaction		Disease awareness	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Observation group	15	59.86 ± 4.03	84.59 ± 4.73	72.18 ± 4.37	90.43 ± 3.59	61.58 ± 4.18	82.76 ± 4.91	52.88 ± 3.47	87.49 ± 5.04	56.86 ± 3.76	75.48 ± 4.31
Control group	15	59.89 ± 4.08	78.92 ± 4.60	72.24 ± 4.40	83.29 ± 3.55	61.64 ± 4.23	74.59 ± 4.86	52.86 ± 3.53	78.45 ± 5.01	56.91 ± 3.72	68.41 ± 4.27
t	-	0.020	3.328	0.037	5.477	0.039	4.580	0.016	4.927	0.037	4.513
P	-	0.984	0.002	0.970	0.000	0.969	0.000	0.988	0.000	0.971	0.000

4. Discussion

The physiological function of coronary arteries is to supply blood to cardiac tissue to maintain blood fluidity and stabilize myocardial function [2]. Abnormal blood lipid levels indicate a large number of cholesterol substances accumulated inside the coronary arteries, where long-term accumulation will increase the stenosis of the arterial wall, leading to coronary artery blockage. This results in a reduced blood supply to the myocardial tissue and ultimately induces CHD due to myocardial ischemia. The main symptoms of CHD are arrhythmia or angina, which often require interventional therapy, drug therapy, or surgery as treatment. Among them, the commonly used procedures for interventional treatment include intraluminal coronary angioplasty, coronary artery rotation, and thrombolytic therapy. The procedure must be reasonably selected based on the patient's condition to control the disease. Surgical treatment is mainly surgical bypass surgery, which can reduce symptoms, prolong survival, and improve the patient's quality of life [3]. However, interventional therapy and surgical treatment are only suitable for critically ill patients. For community-dwelling elderly CHD patients, drug treatment is often used. Commonly used therapeutic drugs include blood lipid-regulating drugs, nitrates, anticoagulants, and calcium ion antagonists. Individualized medication plans can be adopted according to the patient's condition and disease characteristics. Among the many types of drugs used, antiplatelet drugs are the most popular. They can expand the patient's coronary arteries and restore the blood circulation function of myocardial tissue, thus improving the treatment's overall efficacy. Currently, there are many widely used antiplatelet drugs and their therapeutic

effects vary. It is crucial to rationally screen-specific drugs to ensure their therapeutic efficacy and safety [4].

ASP is a frequently used antiplatelet agent and is usually administered orally. ASP reduces the physiological activity of cyclooxygenase and blocks multiple conversion channels of thromboxane A2 (TxA2), thereby reducing the effective production of benzene and resisting the effects of TxA2. In return, platelets rapidly aggregate to correct abnormal blood circulation, thereby regulating the blood supply to the myocardium and fully exhibiting its anti-thrombotic properties [5]. This drug has been used for a long time and has a relatively well-developed dosing regimen; hence its application has a high feasibility. However, long-term use of ASP may cause drug resistance, which interferes with the therapeutic effect of the drug. Elderly patients have a low physical tolerance. If ASPs are taken orally for a long time, elderly patients may be prone to gastrointestinal discomfort and have an increased risk of gastric mucosal bleeding [6]. In addition, long-term oral administration of this drug can easily cause liver function damage and induce various adverse drug reactions, thus it has low patient compliance. In addition, elderly patients have poor coagulation function, which aggravates the progression of CHD, increases blood viscosity, and increases the risk of thrombosis. Therefore, during antiplatelet treatment for elderly CHD patients in the community, factors such as organ function, age, and drug tolerance, need to be fully considered to select drugs that are efficient and safe [7].

CLO is derived from thiopyridine. CLO exhibits an inhibitory effect on the binding process of platelets to adenosine phosphate and can delay the induction process of platelet aggregation by adenosine phosphate. Furthermore, the corresponding sites where fibrinogen binds to platelets are quickly occupied, thus blocking the activation and aggregation process of the above two substances, exerting anti-thrombotic effects. The pharmacological action process of CLO is irreversible, leading to a significant antiplatelet effect and a higher efficacy [8]. In addition, CLO has a strong inhibitory effect on the production of lipid cells and macrophages inside plaques. It can accelerate the effective production of smooth muscle cells to stabilize coronary plaques. Furthermore, the drug does not affect the production of prostacyclin, thereby reducing water and sodium retention reactions. It also does not continuously irritate the gastrointestinal tract, can prevent gastric mucosal damage, and is relatively safe [9].

The results showed that the total treatment-effective rate of the observation group was higher than that of the control group, and the rate of adverse drug reactions and long-term adverse cardiovascular events of the observation group was lower than that of the control group ($P < 0.05$). After treatment, the quality-of-life scores of the observation group were higher than those of the reference group ($P < 0.05$). The combination of ASP and CLO can fully utilize the mechanism of action of the two drugs, significantly control the disease, protect heart function, and improve disease-related symptoms. Moreover, it can activate platelet function, adjust blood viscosity, significantly inhibit platelet aggregation, and avoid long-term and continuous erosion of myocardial cells by neutrophils, thereby protecting myocardial tissue, enhancing efficacy, and preventing adverse events such as atrial fibrillation or myocardial infarction [10]. In addition, the two drugs have different working principles and therapeutic targets. They can reduce the degree of angina pectoris in multiple ways, thereby improving the patient's quality of life. Combined treatment of CHS with CLO can reduce the drug toxicity of ASP, thereby reducing adverse reactions after medication [11].

5. Conclusion

CLO combined with ASP can be used as a common medication regimen for community-dwelling elderly CHD patients. It effectively prevents platelet aggregation, corrects disease symptoms, reduces discomfort, and prevents adverse cardiovascular events. It has high medication rationality and is worthy of popularization.

Disclosure statement

The author declares no conflict of interest.

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