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Analysis of the Therapeutic Effect of Clopidogrel Bisulfate Tablets + Aspirin Enteric-Coated Tablets on Acute Myocardial Infarction

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Abstract: *Objective:* To investigate and analyze the clinical effect of clopidogrel bisulfate tablets combined with aspirin enteric-coated tablets on acute myocardial infarction (AMI) patients. *Methods*: The study period was from January 2020 to December 2023, the sample source was 82 AMI patients admitted to our hospital, grouped into an observation group (n = 41) and a control group (n = 41) by the numerical table method. The patients in the control group were treated with aspirin enteric-coated tablets, and the patients in the observation group were treated with aspirin enteric-coated tablets combined with clopidogrel bisulfate. The clinical efficacy, coagulation indexes, and the incidence of cardiovascular adverse events between the two groups were compared. *Results:* The clinical efficacy of the observation group was higher than that of the control group ($P < 0.05$); the platelet aggregation rate (PAR) of the observation group was lower than that of the control group after treatment ($P < 0.05$), and there was no significant difference in the prothrombin time (PT) and activated partial thromboplastin time (APTT) between the two groups ($P > 0.05$). The incidence of cardiovascular adverse events in the observation group was lower than that of the control group ($P < 0.05$). *Conclusion:* The treatment effect of clopidogrel bisulfate tablets combined with aspirin enteric-coated tablets on AMI patients is remarkable. It reduces the PAR and the incidence of cardiovascular adverse events, so this treatment method should be popularized.

Keywords: Clopidogrel bisulfate; Aspirin enteric-coated tablets; Acute myocardial infarction

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1. Introduction

Acute myocardial infarction (AMI) is a prevalent critical cardiovascular condition characterized by myocardial necrosis resulting from reduced blood supply following acute coronary artery obstruction. This leads to impaired cardiac function, with clinical symptoms including anterior heart pain, chest tightness, shortness of breath, dyspnea, and coughing. Timely intervention is crucial to prevent life-threatening complications. The primary goal of clinical treatment for AMI is to reopen the blocked coronary artery, enhance myocardial blood supply, and alleviate symptoms. Aspirin is a conventional drug used in AMI treatment, primarily functioning to inhibit platelet aggregation and prevent thrombosis. Clopidogrel bisulfate, a newer antithrombotic medication,

has shown efficacy in combination with aspirin for AMI treatment, as supported by several studies. This study selected 82 patients diagnosed with AMI to investigate the clinical efficacy of clopidogrel bisulfate tablets in combination with enteric-coated aspirin tablets.

2. Information and methods

2.1. General information

The study was conducted from January 2023 to December 2023, involving a sample of 82 AMI patients admitted to our hospital. They were divided into two groups: an observation group (n = 41) and a control group (n = 41) using the numerical table method. In the observation group, there were 25 males and 16 females, with ages ranging from 48 to 71 years and a mean age of 59.52 ± 3.76 years. The onset-to-admission time ranged from 1 to 6 hours, with a mean of 3.44 ± 0.68 hours. The control group comprised 23 males and 18 females, aged between 50 and 72 years, with a mean age of 59.61 ± 3.68 years. The onset-to-admission time ranged from 1 to 5 hours, with a mean of 3.38 ± 0.74 hours. There were no significant differences in the general patient information between the two groups ($P > 0.05$).

Inclusion criteria: (1) Consistency with the AMI diagnostic criteria outlined in the Guidelines for Diagnosis and Treatment of Acute ST-Segment Elevation Myocardial Infarction, confirmed by electrocardiogram and other diagnostic tests; (2) Onset-to-admission time less than 12 hours; (3) Absence of contraindications to medication; (4) Signed informed consent document by patients or their family members. Exclusion criteria: (1) Contraindication to thrombolysis or presence of bleeding tendency; (2) Concurrent hepatic and renal insufficiency; (3) Diagnosis of dilated or hypertrophic cardiomyopathy, heart valve disease, or history of coronary artery bypass grafting.

2.2. Methods

Both groups of patients received basic symptomatic treatment for AMI, including rest in bed, administration of statins, nitrate drugs, β-blockers, analgesics, and sedatives as comprehensive therapeutic interventions. They also received an intravenous injection of 10 MU alteplase and a subcutaneous injection of an appropriate amount of low-molecular-weight heparin. Oxygen therapy was administered if patients experienced respiratory distress. Vital signs were closely monitored throughout the treatment period, with treatment programs adjusted as needed.

In the control group, patients were treated with aspirin enteric-coated tablets. They were instructed to take an oral loading dose of 300 mg, followed by a maintenance dose of 100 mg/d for a total of 1 month. In the observation group, patients were treated with aspirin enteric-coated tablets combined with clopidogrel bisulfate. The aspirin dosing regimen was identical to that of the control group. Patients received an oral loading dose of clopidogrel bisulfate of 300 mg, followed by a maintenance dose of 75 mg/d after 2 days of continuous medication for 1 month.

2.3 Evaluation criteria

(1) The clinical efficiency of the two groups was evaluated after 1 month of treatment. The disappearance of clinical symptoms and normalization of electrocardiogram results indicated that the treatment was very effective. Additionally, the treatment was deemed effective if there was a reduction in angina pectoris severity, frequency, and duration, along with improvement in electrocardiogram results. Treatment was deemed ineffective if it did not meet these criteria.

(2) Venous blood samples (2 mL) were collected from both groups of patients before treatment and after

1 month of treatment. Platelet aggregation rate (PAR), prothrombin time (PT), and activated partial thromboplastin time (APTT) were detected using a coagulation analyzer.

(3) Incidence of cardiovascular adverse events in both groups of patients was statistically analyzed.

2.4. Statistical methods

Statistical analysis was performed using SPSS 23.0 software. For measurement data, the *t*-test was utilized and results were presented as mean ± standard deviation (mean ± SD). The χ^2 test was employed for count data, presented as the number of cases and percentages (%). A significance level of $P < 0.05$ was considered statistically significant.

3. Results

3.1. Efficacy

Table 1 shows that the efficacy of the treatment received in the observation group was significantly higher than that of the control group ($P < 0.05$).

Table 1. Comparison of treatment efficacy between the two groups [*n* (%)]

Group	Very effective	Effective	Ineffective	Overall efficacy
Observation group ($n = 41$)	32	7	2	39 (95.10)
Control group ($n = 41$)	25	8	8	33 (80.50)
χ^2				4.100
P				0.042

3.2. Coagulation indexes

Table 2 confirms that the PAR in the observation group was significantly lower than that in the control group after treatment ($P < 0.05$). However, there were no significant differences observed in PT and APTT between the two groups ($P > 0.05$).

Table 2. Comparison of coagulation indexes between the two groups (mean ± SD)

Group	PAR (%)		PT (s)		APTT (s)	
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment
Observation group ($n = 41$)	68.25 ± 5.83	37.25 ± 4.31	11.15 ± 2.48	13.28 ± 2.97	33.08 ± 4.45	39.12 ± 4.16
Control group ($n = 41$)	68.19 ± 5.76	46.93 ± 6.84	11.09 ± 2.51	13.36 ± 2.95	33.12 ± 4.47	39.08 ± 4.22
t	0.047	7.667	0.109	0.122	0.041	0.043
P	0.963	0.000	0.914	0.903	0.968	0.966

3.3. Adverse events

Table 3 depicts that the incidence rate of cardiovascular adverse events in the observation group was lower than that in the control group ($P < 0.05$).

Table 3. Comparison of cardiovascular adverse events between the two groups [*n* (%)]

Group	Re-infarction	Arrhythmia	Post-infarction angina	Total incidence
Observation group (*n* = 41)	1	0	2	3 (7.3)
Control group (*n* = 41)	3	3	4	10 (24.4)
χ^2				4.479
P				0.034

4. Discussion

Statistics indicate that the incidence of AMI has been increasing in China, with the affected population skewing younger. The primary cause of AMI is coronary atherosclerosis, leading to reduced myocardial blood supply and an imbalance between oxygen demand and consumption. This imbalance induces myocardial tissue necrosis. The condition of AMI patients deteriorates rapidly, and without intervention, persistent precordial pain can escalate, potentially leading to life-threatening necrosis. The expansion of the necrotic area poses further risks to the patient's life.

The study results underscore a significant clinical efficiency of 95.1% in the observation group compared to the control group, emphasizing the potent treatment effect of clopidogrel bisulfate tablets combined with aspirin for AMI patients. Timely restoration of myocardial blood perfusion is pivotal in mitigating myocardial hypoxia and ischemia, thereby alleviating symptoms like angina pectoris during AMI treatment. While aspirin enteric-coated tablets commonly inhibit platelet cyclooxygenase, some patients may exhibit inadequate response or experience gastrointestinal discomfort with prolonged use due to their role in blocking the conversion of arachidonic acid into thromboxane A2, a potent platelet aggregator. Conversely, clopidogrel bisulfate tablets, classified as thienopyridine drugs, inhibit adenosine diphosphate receptors and platelet glycoprotein complex synthesis, comprehensively blocking platelet aggregation via multiple pathways, including the inhibition of thromboxane A2 synthesis. By combining both drugs, a more thorough inhibition of platelet aggregation is achieved, leading to improved coronary blood flow and treatment efficacy. The lower post-treatment PAR in the observation group corroborates the combined treatment's efficacy in reducing AMI-related platelet aggregation, thereby minimizing the risk of recurrent cardiovascular events. Moreover, the reduced incidence of cardiovascular adverse events in the observation group underscores the combined treatment's ability to rapidly and comprehensively inhibit platelet aggregation, thereby reducing the likelihood of recurrent cardiovascular events compared to aspirin alone.

5. Conclusion

The remarkable treatment efficacy of combining clopidogrel bisulfate tablets with aspirin enteric-coated tablets in AMI patients is evident, as it significantly reduces PAR and the incidence of cardiovascular adverse events. These findings underscore the potential for widespread adoption and application of this treatment approach.

Disclosure statement

The author declares no conflict of interest.

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