Effect of danhong injection combined with nadroparin calcium on serum CyS−C, CRP, IL−6, vWF, ET and VEGF in patients with acute coronary syndrome

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ABSTRACT

Objective: To study the effect of danhong injection combined with nadroparin calcium on serum CyS-C, CRP, IL-6, vWF, ET and VEGF in patients with acute coronary syndrome. **Methods:** A total of 80 patients with acute coronary syndrome in our hospital from July 2014 to July 2017 were enrolled in this study. The subjects were divided into the control group (n=40) and the treatment group (n=40) randomly. The control group was treated with xuesaitong injection combined with nadroparin calcium; the treatment group was treated with danhong injection combined with nadroparin calcium. The two groups were treated for 2 weeks. The serum CyS-C, CRP, IL-6, vWF, ET and VEGF levels of the two groups before and after treatment were compared. **Results:** There were no significantly differences of the serum CyS-C, CRP, IL-6, vWF, ET and VEGF levels of the two groups before treatment. The serum CyS-C, CRP, IL-6, vWF, ET and VEGF levels of the two groups after treatment were significantly lower than before treatment, and that of the treatment group were significantly better than that of the control group. **Conclusion:** Danhong injection combined with nadroparin calcium can significantly reduce the serum CyS-C, CRP, IL-6, vWF, ET and VEGF levels of patients with acute coronary syndrome, and it was worthy clinical application.

1. Introduction

Acute coronary syndrome (ACS) is a common cardiovascular disease. It is mainly caused by incomplete or incomplete thrombosis due to erosion or rupture of atherosclerotic plaques. The clinical symptoms are chest tightness, chest pain, heart failure, arrhythmia and so on, which can cause sudden death[1]. In recent years, with the increase of people's work pressure and pace of life, the incidence of ACS has increased year by year, which seriously threatens people's normal work and life[2]. At present, there is no standardized treatment for ACS in clinic, so it is of important clinical significance to find a rational and effective ACS treatment. Danhong injection is a common drug in the treatment of cardiovascular and ischemic diseases. It can inhibit thrombosis, reduce myocardial oxygen consumption, and improve the microcirculation of the body; Low molecular weight heparin (LMWH) is a common anticoagulant in clinic. It can coordinate dissolution of thrombus and inhibit thrombus formation. The combination of this two groups of drugs has good efficacy in the treatment of ACS, however, the clinical mechanism is not clear[3–5]. To study the effect of danhong injection combined with nadroparin calcium on serum CyS-C, CRP, IL-6, vWF, ET and VEGF in patients with acute coronary syndrome. This paper was to study the effect of danhong injection combined with nadroparin calcium on serum CyS-C, CRP, IL-6, vWF, ET and VEGF in patients with acute coronary syndrome. The results are presented below.

2. Information and methods

2.1. General information

A total of 80 patients with acute coronary syndrome in our hospital from July 2014 to July 2017 were enrolled in this study.

Inclusion criteria: (1) Compliance with the ACS diagnostic criteria

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established by the American Heart Association (ACC/AHA)[6]: (a) ST elevation acute myocardial infarction: Chest ischemia time is longer than 30 min, More than 2 of precordial ST segment elevation was 0.2 mV; The content of cardiac specific troponin I is above 2 ng/mL. (b) Non ST segment elevation acute myocardial infarction: comply with the above diagnostic criteria, but no ST segment elevation; (c) Unstable angina pectoris: Chest ischemia is longer than 30 min, but cardiac specific troponin I levels are normal; (2) ACS patients were diagnosed by coronary angiography;

Exclusion criteria: (1) Patients with severe acute or chronic infection; (2) Patients with hepatic or renal dysfunction; (3) Patients with autoimmune diseases; (4) Patients with coagulopathy and peripheral vascular disease; (5) Patients with mental disorders.

The 80 subjects included in this study were randomly divided into the control group and the treatment group, each with 40 cases. The control group consisted of 25 males and 15 females, aged 60-82 years and mean age (67.41±9.05) years; Pathological types: 5 cases of acute ST segment elevation myocardial infarction, 13 cases of acute non ST segment elevation myocardial infarction, 22 cases of unstable angina pectoris. The treatment group consisted of 26 males and 14 females, aged 60-81 years and mean age (66.57±10.23) years; Pathological types: 6 cases of acute ST segment elevation myocardial infarction, 11 cases of acute non ST segment elevation myocardial infarction, 23 cases of unstable angina pectoris. The clinical data of the two groups were not significantly different, which could be followed up. Prior to the beginning of the experiment, each patient was informed of the study and signed the informed consent in person. In addition, this study was approved by the medical ethics committee of our hospital.

2.2 Experimental method

Two groups of patients were given conventional treatment, including antiplatelet, brain protection, dehydration and so on. The patients in the control group were treated with Xuesaitong injection (Purchased from Yunnan Baiyao Group Limited by Share Ltd, specifications 100 mg/branch, Chinese medicine word Z53021499) combined with low molecular heparin calcium(Purchased from Hainan General Alliance Pharmaceutical Co., Ltd., specifications 5 000 IU/branch, Chinese medicine word H20010300), Specifically, Intravenous injection of Xuesaitong injection, 400 mg, added to

Sodium Chloride Solution at a 250 mL concentration of 0.9%, intravenous drip, 1 time/d, continuous 2 w; Low molecular heparin calcium: 5 000 IU/time, subcutaneous injection of abdominal wall, 2 times/d in the first week, 1 times/d in second week, for continuous 2 W. The patients in the treatment group were treated with Danhong injection (Purchased from Shandong red Pharmaceutical Co. Ltd., Specifications 10 mL/branch, Chinese medicine word Z20026866) combined with low molecular heparin calcium, Specifically: Danhong injection, 30 mL, was added to glucose solution of 250 mL concentration of 5%, intravenous drip, 1 time/d, given 2 W continuously; The low molecular weight heparin calcium delivery regimen was similar to that of the control group.

2.3 Detection index

5 mL venous blood of the two groups before and after treatment in the morning fasting state was collected. The supernatant was centrifuged and the serum was kept at -70 centigrade freezer. The serum CyS-C, CRP, IL-6, vWF, ET and VEGF levels of two groups before and after treatment was detected and compared.

The levels of serum yS-C, CRP and IL-6 were detected by Immunoassay kit Purchased from Wuhan Bomaite Biotechnology Co. Ltd. The levels of serum vWF, ET-1 and VEGF were detected by double sandwich enzyme-linked immunosorbent assay.

2.4 Data processing

We Used SPSS 19.0 software package to process the test result data, mean ± standard deviation (Mean ± SD) represents measurement data, T test was used, The general clinical data were count data, and the form was rate (%).,using x^2, $P<0.05$ indicated that the two groups had significant difference.

3. Results

3.1. Comparison of serum CyS–C, CRP and IL–6 levels before and after treatment in two groups

Before treatment,the levels of CyS-C, CRP and IL-6 in the control group were (1.37±0.81) mg/L, (5.15±1.36) mg/L and (14.27±4.65) ng/L, that in the treatment group were (1.32±0.77) mg/

Table 1.

Comparison of serum CyS-C, CRP and IL-6 levels before and after treatment in two groups.

Group	n	Time	CyS-C (mg/L)	CRP (mg/L)	IL-6 (ng/L)
Control group	40	Before treatment	1.37±0.81	5.15±1.36	14.27±4.65
		After treatment	1.01±0.40[*]	4.33±1.11[*]	9.14±2.63[*]
Treatment group	40	Before treatment	1.32±0.77	5.09±1.41	14.18±4.52
		After treatment	0.72±0.35[*#]	3.16±1.08[*#]	5.27±1.70[*#]

Note: compared with before treatment, [*]$P<0.05$; compared with the control group, [#]$P<0.05$.

Table 2.
Comparison of serum vWF, ET and VEGF levels before and after treatment in two groups.

Group	n	Time	vWF ($\times 10^{-2}$)	ET (ng/L)	VEGF (pg/mL)
Control group	40	Before treatment	98.46±8.02	71.18±3.11	157.89±33.64
		After treatment	81.32±6.45[*]	52.44±2.87[*]	110.42±26.15[*]
Treatment group	40	Before treatment	97.55±7.84	69.92±3.65	160.77±31.13
		After treatment	63.17±5.23[*#]	40.31±2.01[*#]	90.21±18.43[*#]

Note: compared with before treatment, [*]$P<0.05$; compared with the control group, [#]$P<0.05$.

L, (5.09±1.41) mg/L and (14.18±4.52) ng/L, there was no significant difference between the two groups ($P>0.05$); After treatment, the levels of serum CyS-C, CRP and IL-6 in the control group were (1.01±0.40) mg/L, (4.33±1.11) mg/L and (9.14±2.63) ng/L, that in the treatment group were (0.72±0.35) mg/L, (3.16±1.08) mg/L and (5.27±1.70) ng/L. The above serum levels of the two groups were significantly lower than those before treatment, and the serum levels of the patients in the treatment group were significantly lower than those in the control group, the difference was statistically significant ($P<0.05$). Please look at the table 1.

3.2 Comparison of serum vWF, ET and VEGF levels before and after treatment in two groups

Before treatment, the levels of vWF, ET and VEGF in the control group were (98.46±8.02)×10^{-2}, (71.18±3.11) ng/L and (157.89±33.64) pg/mL, that in the treatment group were (97.55±7.84)×10^{-2}, (69.92±3.65) ng/L and (160.77±31.13) pg/mL, there was no significant difference between the two groups ($P>0.05$); After treatment, the levels of serum vWF, ET and VEGF in the control group were (81.32±6.45)×10^{-2}, (52.44±2.87) ng/L and (110.42±26.15) pg/mL, that in the treatment group were (63.17±5.23)×10^{-2}, (40.31±2.01) ng/L and (90.21±18.43) pg/mL. The serum levels of vWF, ET and VEGF in the two groups were significantly lower than those before treatment, and the serum levels of vWF, ET and VEGF in the treatment group were significantly lower than those in the control group, the difference was statistically significant ($P<0.05$).Please look at the table 2.

4. Discussion

Research shows that[7,8], the pathogenesis of ACS is the formation of a large number of inflammatory cytokines and platelet activating factors in atherosclerotic plaques. Inflammatory factors can induce thrombosis by enhancing the expression of procoagulant agents. Platelet activating factor accelerates platelet aggregation and adhesion and leads to the formation of white thrombus, both can cause acute embolism of the blood vessel and lead to the occurrence of myocardial ischemia, the main influencing factors are oxidative stress, inflammatory reaction, vascular endothelial

function and so on. Based on this, improving platelet activation, inflammatory factors, vascular endothelial function and so on, is the focus of treatment of ACS. Danhong injection is a commonly used compound preparation, the main components of which are Salvia miltiorrhiza and safflower, Clinical efficacy were as follows: (1) Through the expansion of coronary artery to improve coronary blood flow, but also can extend the peripheral blood vessels to improve microcirculation, has a role in promoting blood circulation; (2) Inhibiting platelet aggregation and promoting fibrinolysis, it has the function of preventing thrombus; (3) Enhance the body's ability to resist hypoxia, enhance immunity, and reduce blood sugar; (4) Reduce the role of blood lipids[9,10]. Low molecular weight heparin calcium is a low molecular weight heparin calcium, has synergistic effect on the formation of thrombosis, and can inhibit the formation of thrombosis[11]. This paper was to study the effect of danhong injection combined with nadroparin calcium on serum CyS-C, CRP, IL-6, vWF, ET and VEGF in patients with acute coronary syndrome, so as to clarify the clinical mechanism of Danhong injection combined with low molecular weight heparin calcium in the treatment of ACS.

The results showed that there was no significant difference in serum CyS-C, CRP, IL-6, vWF, ET and VEGF levels between the two groups before treatment ($P>0.05$); The serum levels of CyS-C, CRP, IL-6, vWF, ET and VEGF in the two groups were significantly lower than those before treatment, the serum levels of CyS-C, CRP, IL-6, vWF, ET and VEGF in the treatment group were better than those in the control group, and the difference was statistically significant ($P<0.05$). The results suggested that Danhong injection combined with low molecular weight heparin calcium can significantly reduce the serum levels of CyS-C, CRP, IL-6, vWF, ET and VEGF in patients with ACS. CyS-C is a cysteine protease inhibitor that plays an important role in the regulation of cysteine protease activity and the homeostasis of the extracellular matrix (ECM) and participates in and regulates the inflammatory response process, and studies have shown that elevated serum levels are related to the stability of atherosclerotic plaques and therefore are one of the molecular markers for the detection and diagnosis of coronary heart disease[12]. Both CRP and IL-6 are important indicators of inflammation and play an important role in the development and progression of atherosclerosis[13]. VWF is a sensitive indicator of vascular endothelial cell injury, and ET is a vasoconstrictor factor

necessary for the synthesis of vascular endothelial cells, VEGF is an important cytokine in angiogenesis. When the vascular endothelium is damaged, the coagulation and fibrinolysis system is activated and a large number of activating factors are released, which results in the elevation of serum vWF, ET and VEGF levels[14–16]. Danhong injection combined with low molecular weight heparin can inhibit thrombosis and stabilize plaques in patients with ACS, thus reducing the levels of serum CyS-C, CRP and IL-6, and It can also improve the vascular endothelial function of patients, and decrease the serum levels of vWF, ET and VEGF[17].

In conclusion, Danhong injection combined with low molecular weight heparin calcium can significantly reduce the serum levels of CyS-C, CRP, IL-6, vWF, ET and VEGF in patients with ACS, and deserve to be popularized in clinical practice.

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