Cardiovascular Reviews, 2025, Volume 3, Issue 4
http://ojs.bbwpublisher.com/index.php/CR
Online ISSN: 2981-8109
Print ISSN: 3083-4880

The Clinical Effect of Xuesaitong in the Treatment of Coronary Heart Disease and its Influence on the Hemorheology of Patients

Dejia Hu, Jihai Fan, Wei Gui, Zhen Li, Peng Zhao, Xianlei Deng, Chenran Guo, Lingui Xu

Department of Cardiovascular Medicine, BOE Suzhou Hospital, Suzhou 215000, Jiangsu, China

**Author to whom correspondence should be addressed.*

Abstract: *Objective*: To explore the therapeutic effect of Xuesaitong on patients with coronary heart disease and its influence on their hemorheology. *Methods*: A total of 80 patients with coronary heart disease were included as observation samples. All of them received treatment in our hospital from January 2024 to January 2025. They were divided into the control group (n = 40, conventional treatment) and the observation group (n = 40, conventional treatment + Xuesaitong treatment) by lottery. The clinical efficacy was analyzed. *Result*: The therapeutic effect and the improvement of hemorheology in the observation group were both better than those in the control group, and the comparisons were statistically significant ($P < 0.05$). *Conclusion*: The treatment effect of Xuesaitong on patients with coronary heart disease is remarkable, and it is worthy of clinical promotion and application.

Keywords: Xuesaitong; Coronary heart disease; Clinical effect; Hemorheology

Online publication: December 31, 2025

1. Introduction

Coronary heart disease is a common and frequently-occurring disease in the clinical cardiovascular system. Clinically, it is mainly characterized by angina pectoris, chest tightness, and shortness of breath after activity. Its pathological mechanism is related to vascular endothelial injury, lipid metabolism disorders, platelet aggregation, and abnormal hemorheology, etc. [1] For this disease, clinical treatment mainly focuses on symptomatic therapy. Although it can delay the progression of the disease to a certain extent, some patients have problems such as poor disease control and insignificant improvement in hemorheological indicators, which affect their prognosis [2]. Traditional Chinese medicine has unique insights in treating such diseases, and Xuesaitong is a commonly used Chinese patent medicine in clinical practice. Based on this, this study will conduct an in-depth analysis of the therapeutic effect of Xuesaitong on patients with coronary heart disease and its impact on their hemorheology.

2. Materials and methods

2.1. Research data

A total of 80 patients with coronary heart disease admitted to our hospital from January 2024 to January 2025 were included as observation samples. They were divided into two groups by lottery, with 40 cases in each group. In the control group, there were 22 males and 18 females. The age ranged from 45 to 75 years old, with an average of (62.34 ± 5.18) years old. In the observation group, there were 23 males and 17 females. The age ranged from 46 to 74 years old, with an average of (61.82 ± 6.01) years old. Comparison of general data between the two groups ($P > 0.05$). This research does not violate national laws and regulations and complies with medical ethics principles.

The inclusion criteria are as follows:

(1) Diagnosed with coronary heart disease through examinations such as CCTA and CAG;
(2) Clear consciousness and normal cognitive function;
(3) The patient and their family members are fully informed and voluntarily sign the informed consent form.

The exclusion criteria are as follows:

(1) Complicated with severe cardiovascular complications such as acute myocardial infarction and severe heart failure;
(2) Combined with serious underlying diseases such as malignant tumors and severe infections;
(3) Patients with mental disorders or cognitive dysfunction.

2.2. Methods

2.2.1. Control group

The control group received conventional treatment, mainly symptomatic treatment, such as lifestyle intervention, antiplatelet therapy, lipid regulation to stabilize plaques, and improvement of myocardial blood supply, etc.

2.2.2. Observation group

The observation group was additionally treated with Xuesaitong (produced by: Bikang Pharmaceutical Xinyi Group Holding Co., LTD.; National Drug Approval Number: Z32020673). Xuesaitong injection was administered at a dose of 300 mg, diluted in 250 mL of 5% glucose solution. The diluted solution was delivered via intravenous infusion at a controlled rate of 40–60 drops per minute, once daily. Treatment was continued for a duration of two weeks in both groups.

2.3. Observation indicators

2.3.1. Therapeutic effect

Clinical symptoms were significantly relieved or disappear, daily activity endurance was significantly enhanced, and the myocardial ischemia manifestations shown on the electrocardiogram are significantly improved or return to normal. Clinical symptoms have been alleviated, the frequency and severity of attacks have decreased, the endurance for daily activities has improved, and the electrocardiogram shows that the manifestations of myocardial ischemia have improved. Clinical symptoms do not improve or even worsen; daily activity endurance does not improve or decreases; electrocardiogram shows no improvement or deterioration in myocardial ischemia manifestations. The total effective rate = (number of markedly effective cases + number of effective cases)/total number of cases ×100%.

2.3.2. Hemorheology

Changes in the high shear (high cut-off) whole blood viscosity, low shear (low cut-off) whole blood viscosity, and plasma viscosity ratio were analyzed.

2.4. Statistical methods

Data were processed using SPSS24.0 software. Measurement data were expressed as mean ± SD and the t-test was applied. The comparison of count data rates was conducted using the χ^2 test. A P value < 0.05 was considered statistically significant.

3. Results

3.1. Therapeutic effect

The therapeutic effect of the observation group was better than that of the control group ($P < 0.05$) (**Table 1**).

Table 1. Therapeutic effect (n, %)

Group	n	Show effect	Effective	Invalid	Total effective rate
Observation group	40	28	11	1	97.50%
Control group	40	19	14	7	82.50%
χ^2	-	-	-	-	5.000
P	-	-	-	-	0.025

3.2. Hemorheology

At the baseline period, the comparison of hemorheology between the two groups ($P > 0.05$). After treatment, compared with the control group, the hemorheology of the observation group was better ($P < 0.05$) (**Table 2**).

Table 2. Hemorheology (mean ± SD, mPa·s)

Group	n	High cut-off value of whole blood viscosity		Low cut-off value of whole blood viscosity		Plasma viscosity ratio	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Observation group	40	6.85 ± 0.52	5.23 ± 0.41	9.76 ± 0.83	7.32 ± 0.65	1.92 ± 0.13	1.65 ± 0.09
Control group	40	6.82 ± 0.55	5.98 ± 0.43	9.73 ± 0.81	8.56 ± 0.72	1.91 ± 0.12	1.78 ± 0.10
t	-	0.251	7.984	0.164	8.085	0.357	6.111
P	-	0.803	0.000	0.871	0.000	0.722	0.000

4. Discussion

In traditional Chinese medicine, coronary heart disease is classified under the categories of “chest obstruction” and “heart pain”. The core of its onset lies in the obstruction of the heart meridian. Although the location of the disease is in the heart, it is closely related to the dysfunction of the liver, spleen and kidney [3]. The pathological essence of this disease is “deficiency at the root and excess at the symptoms”. Improper diet leading to the internal generation of phlegm and dampness, emotional imbalance causing Qi stagnation and blood stasis, internal invasion of cold

pathogenic factors blocking the heart meridian, and old age and physical weakness resulting in deficiency of the heart and kidneys can all cause obstruction of the heart meridian, leading to chest pain [4]. The core of traditional Chinese medicine in treating coronary heart disease emphasizes syndrome differentiation and treatment, as well as addressing both the symptoms and root causes. During the treatment process, it is necessary to focus on overall conditioning rather than merely addressing local symptoms. Personalized treatment plans should be formulated for patients by analyzing the differences in their syndrome types [5]. For instance, for "inherent deficiency", it is necessary to tonify Qi, nourish Yin and warm Yang to support the body's vital energy and restore the functions of the internal organs. For "symptomatic excess", methods such as promoting blood circulation and removing blood stasis, resolving phlegm and dispersing nodules, regulating Qi and relieving pain, and warming Yang and dispelling cold are used to eliminate pathogenic factors and unblock the heart meridians [6]. At the same time, traditional Chinese medicine emphasizes supporting the body's vital energy without assisting pathogenic factors and eliminating pathogenic factors without harming the body's vital energy. It not only improves the operating environment of the heart meridian by regulating Qi and blood and balancing the internal organs, but also pays attention to avoiding the bias of a single treatment method [7].

The Xuesaitong injection used in this study is a commonly used traditional Chinese medicine injection in clinical practice. Its core component is the total saponins of *Panax notoginseng* extracted and purified from the dried roots and rhizomes of *Panax notoginseng* from the Araliaceae family. The effective components include ginsenoside Rg1, ginsenoside Rb1, and *Panax notoside* R1, etc. [8] The research shows that the therapeutic effect of the observation group is better than that of the control group ($P < 0.05$). The core component of Xuesaitong is total saponins from *Panax notoginseng*. It inherits the nature of *Panax notoginseng*, which is "sweet, warm, slightly bitter and enters the liver and heart meridians". During the treatment process, it can closely focus on the core pathogenesis of coronary heart disease patients, which is characterized by blood stasis in the heart vessels and deficiency of the root and excess of the symptoms [9]. This medicine has the effect of promoting the circulation of Qi and blood and unblocking the blood vessels. It can directly disperse the stasis and turbidity in the coronary blood vessels, quickly relieve angina pectoris and chest tightness, and improve the problem of "pain due to obstruction" in patients [10]. At the same time, Xuesaitong also has the effect of tonifying Qi and nourishing the heart. It can replenish heart Yang, enrich heart blood, improve the deficiency of heart muscle nourishment and insufficient motility caused by heart Qi deficiency, and reduce shortness of breath and fatigue caused by "lack of nourishment leads to pain" [11]. From the perspective of Western medicine, the total saponins of *Panax notoginseng* in Xuesaitong can play a role from different angles. Among them, ginsenoside Rg1 can activate vascular endothelial nitric oxide synthase to promote the release of nitric oxide and dilate coronary arteries to increase myocardial blood supply [12]. Ginsenoside Rb1 can protect myocardial mitochondrial function, inhibit apoptosis to enhance myocardial hypoxia tolerance, and at the same time regulate sympathetic nerve balance to reduce myocardial oxygen consumption, thereby improving the clinical symptoms of patients and enhancing the therapeutic effect.

The research also showed that compared with the control group, the improvement degree of hemorheology in the observation group was better ($P < 0.05$). Xuesaitong can regulate the rhythm of Qi and blood circulation in patients, change the vicious cycle of blood stagnation leading to blood stasis and stasis aggravating stagnation, improve the thick and viscous state of blood as a whole, and optimize hemorheological indicators [13]. During the treatment process, total saponins of *Panax notoginseng* inhibit the release of platelet-activating factors and their binding to receptors, reduce the expression of adhesion molecules on the platelet surface, significantly suppress

the platelet aggregation rate, decrease the risk of microthrombosis formation, and prevent the increase of blood "aggregation" [14]. At the same time, it can enhance the fluidity and deformability of red blood cell membranes, reduce hematocrit, and decrease the electrostatic adhesion between red blood cells, thereby improving the high and low shear viscosities of whole blood [15]. In addition, total saponins of *Panax notoginseng* can also regulate the metabolism of macromolecular substances such as fibrinogen and lipoprotein in plasma, reduce the colloid osmotic pressure of plasma, and decrease the viscosity of plasma.

5. Conclusion

In conclusion, the application of Xuesaitong in the treatment of coronary heart disease has a remarkable effect, can effectively improve the hemorheology of patients, and has clinical promotion and application value.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Wu J, Fu P, Wang Y, 2025, Clinical Study on Xuesaitong Soft Capsules Combined with Aspirin in the Treatment of Coronary Heart Disease in the Elderly. Modern Medicine and Clinical Practice, 40(7): 1711–1715.

[2] Zhang R, 2023, Observation on the Therapeutic Effect of Xuesaitong Combined with Atorvastatin in the Treatment of Unstable Angina Pectoris of Coronary Heart Disease. Smart Health, 9(14): 251–254.

[3] Dong Z, Han S, Lin L, et al. Comprehensive Evaluation Study of Xuesaitong Soft Capsules. Chinese Journal of Clinical Pharmacology, 37(12): 1612–1624.

[4] Li X, Li H, Han L, et al., 2023, Research Progress on the Clinical Efficacy and Safety of Xuesaitong Injection. China Prescription Drugs, 21(11): 178–182.

[5] Xu C, 2023, Therapeutic Effects of Xuesaitong Injection and Compound Danshen Drop Pills on Angina Pectoris of Coronary Heart Disease. Electronic Journal of Cardiovascular Diseases in Integrated Traditional Chinese and Western Medicine, 11(27): 25–27.

[6] Zhang X, Ma X, Chen X, 2023, The Effect of Xuesaitong Freeze-Dried Powder Injection combined with Betaloc on the Frequency, Duration and Cardiac Function of Angina Pectoris Attacks in Emergency Patients with Coronary Heart Disease and Angina Pectoris. Baotou Medical Journal, 47(3): 19–21.

[7] Jia M, Liang X, Fu G, et al., 2023, Prince Li Xian? Expert Consensus on the Clinical Application of Xuesaitong Soft Capsules. Chinese Journal of Traditional Chinese Medicine, 48 (20): 5668–5674.

[8] Li G, 2021, Evaluation of the Clinical Effect of Xuesaitong Injection in the Treatment of Coronary Heart Disease. Medical Frontiers, 11(9): 41–42.

[9] Chen J, 2021, Effects of Xuesaitong Combined with Dipyridamole on Hemorheological Index Levels and the Frequency of Angina pectoris Attacks in Patients with Coronary Heart Disease. Chinese Journal of Minkang Medicine, 33(6): 94-96.

[10] Cai Y, 2023, The Effect of Xuesaitong as an Adjuvant Therapy on Patients with Coronary Heart Disease and its Influence on Hemorheology. Electronic Journal of Integrated Traditional Chinese and Western Medicine on Cardiovascular Diseases, 11(1): 40–42.

[11] Li H, Wang N, Huang B, 2022, Observation on the Therapeutic Effect of Xuesaitong Soft Capsules in the Treatment of Exertional Angina Pectoris. Chinese Journal of Modern Pharmaceutical Application, 16(20): 6–9.

[12] Liu K, Shen F, 2022, Evaluation of the Intervention Effect of Xuesaitong Soft Capsules in Coronary Atherosclerotic Plaques. Chinese Journal of Modern Drug Application, 16(16): 126–128.

[13] Dong Y, Chen H, Liu Y, et al., 2020, Clinical Study on the Intervention of Xuesaitong Soft Capsules in the lncR CTB114C7.4-miR3656-BCL2A1 Regulatory Network in Patients with Coronary Heart Disease and Blood Stasis Syndrome. World Science and Technology: Modernization of Traditional Chinese Medicine, 22(11): 3846–3852.

[14] Zhang C, Peng Y, Wu H, 2022, The Influence of Xuesaitong on Serum Homocysteine and other Substances in Patients with Angina Pectoris after Interventional Therapy. Northwest Journal of Pharmacy, 37(2): 154–158.

[15] Liang M, 2021, The Efficacy of metoprolol Combined with Xuesaitong Injection in the Treatment of Coronary Heart Disease and Heart Failure and Its Impact on patients' Blood Rheology and Cardiac Function. Smart Health, 7(27): 169–171.