



Effect of compound danshen dropping pill on angina as well as serum c-reactive protein (CRP) and brain natriuretic peptide (BNP)

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ABSTRACT

Objective: To study the effect of Compound Danshen Dropping Pill on angina as well as serum C-reactive protein (CRP) and brain natriuretic peptide (BNP) so as to provide reference for clinical treatment. **Methods:** Patients with angina treated in our hospital from February 2010 to August 2015 were enrolled in this research. The effect of Compound Danshen Dropping Pill on angina as well as serum C reaction protein (CRP) and brain natriuretic peptide (BNP) were analyzed. 110 cases of healthy subjects receiving physical examination in our hospital during the same period were taken as control. **Results:** After treatment, the duration of angina significantly decreased, the frequency of angina pectoris attack significantly decreased, and serum inflammatory factors IL1, IL2 and IL6 as well as Hcy, TG, TC and LDL levels significantly decreased while HDL, folic acid and vitamin B12 levels significantly increased, and compared with before treatment, differences were with notable statistical significance. **Conclusion:** Compound Danshen Dropping Pill can effectively treat angina, which is related to its regulation of serum C-reactive protein, brain natriuretic peptide and inflammatory factor levels.

1. Introduction

Angina is chest pain or chest discomfort caused by coronary artery blood supply insufficiency and the sharp transient myocardial ischemia, which is mainly clinically manifested as paroxysmal and crushing chest pain[1]. Angina pectoris can be caused by a variety of incentives, such as fatigue, acute circulatory failure, engorgement, chilling, cloudy and rainy weather, etc[2]. Compound Danshen dropping pill is with the clinical effect of quickening the blood and transforming stasis, rectifying qi and relieving pain, reducing the peripheral vascular resistance as well as improving myocardial ischemia and heart burden, and it can also effectively improve microcirculation[3]. C-reactive protein is a key protein that is caused when cells are exposed to external stimuli, and it plays an important role in cell apoptosis and innate immunity process[4]. C-reactive protein is an important marker of the nonspecific inflammatory response[5]. In the research, the effect of Compound Danshen Dropping Pill on angina as well as serum C-reactive protein and brain natriuretic peptide was analyzed so as to provide reference for clinical treatment.

2. Information and methods

2.1 Clinical information

Patients with angina treated in our hospital from February 2010 to August 2015 were enrolled for study. 110 cases of patients included 68 male cases and 42 female cases, they were 56-73 years old and the average was (66 ± 7) years. All patients met the diagnostic criteria for angina established by International Society of Cardiology, were without serious heart and kidney as well as liver and gastrointestinal diseases, and without malignant tumors, diabetes and so on. 110 cases of healthy subjects receiving physical examination in our hospital during the same period were taken as control group. General information of two groups was comparable ($P>0.05$).

2.2 Treatment methods and observation indicators

All patients received oral administration of Compound Danshen Dropping Pill (Tianjin Tasly Pharmaceutical Co., Ltd., 25 mg/pill), 10 pills each time and 3 times every day. 30 d was a course of treatment. The treatment effect as well as serum C-reactive protein, brain natriuretic peptide and inflammatory response proteins IL1, IL2, IL6 and TNF levels were analyzed after Compound Danshen Dropping Pill treatment.

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2.3 Detection methods

C-reactive protein and brain natriuretic peptide detection kits were purchased from Nanjing Jiancheng Bioengineering Institute; IL1 and IL2 protein detection kits were purchased from US R&D Company; IL6 and TNF α protein detection kits were purchased from Sigma Company; Hcy, TG and TC as well as LDL and HDL detection kits were purchased from Nanjing Jiancheng Bioengineering Institute. All detection procedures were in accordance with the kit instructions.

2.4 Statistical analysis

Data statistics was completed by SPSS 17.0 statistical software, measurement data was by one-way analysis of variance, measurement data was in terms of Mean \pm SD and count data was by χ^2 test. Differences between groups were considered to be statistically significant at a level of $P < 0.05$.

3. Results

3.1 Analysis of the effect of Compound Danshen Dropping Pill on angina

Analysis of the effect of Compound Danshen Dropping Pill on angina showed that after treatment, the duration of angina significantly decreased, the frequency of angina pectoris attack significantly decreased, serum TG, TC and LDL levels significantly decreased while HDL level significantly increased, and compared with before treatment, differences were with notable statistical significance ($P < 0.05$), shown in Table 1.

Table 1
Analysis of the effect of Compound Danshen Dropping Pill on angina.

Groups	Before treatment	After treatment	P value
Angina duration (min)	9.12 \pm 1.36	5.21 \pm 0.67	$P < 0.05$
Frequency of angina attack (times/d)	4.89 \pm 1.03	1.66 \pm 0.75	$P < 0.05$
TG (mmol/L)	1.89 \pm 0.54	1.31 \pm 0.42	$P < 0.05$
TC (mmol/L)	5.95 \pm 1.04	4.18 \pm 1.34	$P < 0.05$
LDL (mmol/L)	3.65 \pm 0.37	2.10 \pm 0.38	$P < 0.05$
HDL (mmol/L)	1.31 \pm 0.25	1.94 \pm 0.57	$P < 0.05$

Table 2
Changes of serum C-reactive protein, adiponectin and brain natriuretic peptide levels in patients with angina after Compound Danshen Dropping Pill treatment

Groups	Control group	Treatment group		P value
		Before treatment	After treatment	
CRP (mg/L)	2.35 \pm 0.08	6.38 \pm 1.14	4.33 \pm 0.87	$P < 0.05$
Adiponectin (mg/L)	3.69 \pm 0.67	8.55 \pm 1.94	6.34 \pm 1.17	$P < 0.05$
BNP (fmol/mL)	0.86 \pm 0.13	3.02 \pm 0.65	1.89 \pm 0.81	$P < 0.05$
TNF (ng/mL)	9.33 \pm 1.62	19.6 \pm 3.64	12.8 \pm 1.87	$P < 0.05$

Table 3
Changes of serum inflammatory response factor levels in patients with angina after Compound Danshen Dropping Pill treatment

Groups	Control group	Treatment group		P value
		Before treatment	After treatment	
IL1 (ng/mL)	21.3 \pm 3.64	38.7 \pm 5.96	25.4 \pm 3.71	$P < 0.05$
IL2 (ng/mL)	32.6 \pm 8.04	53.6 \pm 11.7	43.1 \pm 9.21	$P < 0.05$
IL6 (ng/mL)	41.3 \pm 5.87	55.7 \pm 9.31	47.8 \pm 6.38	$P < 0.05$

3.2 Changes of serum C-reactive protein, adiponectin and brain natriuretic peptide levels in patients with angina after Compound Danshen Dropping Pill treatment

Analysis of the changes of serum C-reactive protein, adiponectin and brain natriuretic peptide levels in patients with angina after Compound Danshen Dropping Pill treatment showed that serum C-reactive protein, adiponectin and brain natriuretic peptide and TNF protein levels significantly increased, and compared with before treatment, differences were with notable statistical significance ($P < 0.05$), shown in Table 2.

3.3 Changes of serum inflammatory response factor levels in patients with angina after Compound Danshen Dropping Pill treatment

Analysis of the changes of serum inflammatory response factor protein levels in patients with angina after Compound Danshen Dropping Pill treatment showed that serum IL1, IL2 and IL6 levels significantly increased, and compared with before treatment, differences were notable statistical significance ($P < 0.05$), shown in Table 3.

3.4 Changes of serum Hcy, folic acid and vitamin B12 levels in patients with angina after Compound Danshen Dropping Pill treatment

After Compound Danshen Dropping Pill treatment of patients with angina, serum Hcy level significantly decreased while folic acid and vitamin B₁₂ levels significantly increased, and compared with before treatment, differences were notable statistical significance ($P < 0.05$), shown in Table 4.

4. Discussion

There is atherosclerosis in most patients with coronary heart disease more, and it is clinically manifested as crushing retrosternal chest pain. With the increasing aging population, the incidence of coronary heart disease angina shows a rising trend year by year, but the exact pathological mechanism is unclear. In the research, study

Table 4Changes of serum Hcy, folic acid and vitamin B₁₂ levels in patients with angina after Compound Danshen Dropping Pill treatment.

Groups	Control group	Treatment group		P value
		Before treatment	After treatment	
Hcy (μmol/L)	16.3±2.36	36.9±6.78	22.4±4.08	P<0.05
Folic acid (μg/L)	15.1±2.06	6.42±1.03	9.89±1.44	P<0.05
Vitamin B ₁₂ (μg/L)	333.6±24.1	126.8±15.7	187.6±23.5	P<0.05

of the effect of Compound Danshen Dropping Pill on angina as well as serum C-reactive protein and brain natriuretic peptide showed that after treatment, the duration of angina significantly decreased, the frequency of angina pectoris attack significantly decreased, serum inflammatory factors IL1, IL2 and IL6 as well as Hcy, TG, TC and LDL levels significantly decreased ($P<0.05$) while HDL, folic acid and vitamin B₁₂ levels significantly increased, and compared with before treatment, differences were with notable statistical significance. Therefore, Compound Danshen Dropping Pill can effectively treat angina, which is related to its regulation of serum C-reactive protein, brain natriuretic peptide and inflammatory factor levels.

C-reactive protein is an intracellular nonspecific inflammatory response protein participating in the onset of a variety of cardiovascular diseases[6]. Study that analyzes the curative effect of rosuvastatin and atorvastatin in patient with premature coronary heart disease acute myocardial infarction shows that both can effectively improve the symptoms of coronary heart disease acute myocardial infarction, which is related to their regulation of C-reactive protein levels[7]. Study that analyzes the clinical value of the high-sensitivity C-reactive protein and blood lipid in the diagnosis of cardiovascular diseases also shows that C-reactive protein level is an important and effective indicator for the diagnosis of cardiovascular diseases[8]. Study on the effect of Xinmailong injection on cardiac function and serum high-sensitivity C-reactive protein in of patients with chronic heart failure also suggests that the drug may regulate C-reactive protein levels so as to play the role of improving chronic heart failure[9,10]. The change and correlation analysis of anti-cardiolipin antibody and high-sensitivity C-reactive protein in patients with recurrent cerebral infarction show that CRP level is an important index for clinical diagnosis of recurrent cerebral infarction[11]. In this study, analysis of serum C-reactive protein, adiponectin and brain natriuretic peptide levels after Compound Danshen Dropping Pill treatment of patients with angina pectoris showed that serum C-reactive protein and adiponectin protein levels increased significantly, and compared with before treatment, differences were with notable statistical significance, indicating that Compound Danshen Dropping Pill might regulate the above factors so as to play the role of improving angina pectoris. Interleukin is the most important mediator of inflammatory reaction in the cells, and is also an important factor of cardiovascular disease[12,13]. In this study, analysis of serum inflammatory response protein levels after Compound Danshen Dropping Pill treatment of patients with angina pectoris showed that serum IL1, IL2 and IL6 protein levels significantly increased, and compared with before treatment, differences were with notable statistical significance, indicating that interleukin family was also related to the treatment effect of Compound Danshen Dropping Pill on angina.

Therefore, Compound Danshen Dropping Pill can effectively treat angina, which is related to its regulation of serum C-reactive protein, brain natriuretic peptide and inflammatory factor levels.

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