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Clinical Strategies of Traditional Chinese Medicine for Treating Cardiovascular Diseases Combined with Diabetes

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Abstract: Objective: To analyze the application effectiveness of traditional Chinese medicine (TCM) in treating CVD combined with DM.**Methods:** A study was conducted on 74 patients with CVD combined with DM in our hospital from March 2023 to March 2024. They were divided into a control group of 37 cases receiving conventional Western medical treatment and an observation group of 37 cases receiving combined TCM syndrome differentiation treatment using a random number table method. The clinical efficacy between the two groups was compared.**Results:** The observation group showed significantly higher magnitudes of T-wave changes, ST-segment elevation, and SF-36 scores compared to the control group. Additionally, fasting blood glucose (FBG), 2-hour postprandial glucose (2hPG), and glycated hemoglobin (HbA1c) levels were significantly lower in the observation group compared to the control group ($P < 0.05$).**Conclusion:** Administering TCM syndrome differentiation treatment to patients with CVD combined with DM can effectively improve blood glucose indicators and electrocardiographic results, enhance quality of life, and has potential for promotion.

Keywords: Traditional Chinese Medicine Syndrome Differentiation Treatment; Cardiovascular Diseases; Diabetes Mellitus; Quality of Life

In the past, Western medicine considered coronary heart disease and diabetes as two independent diseases. Modern research suggests that their pathological mechanisms are related to myocardial cell electrophysiological abnormalities caused by disrupted glucose and lipid metabolism and changes in energy metabolism in a high glucose environment. Diabetes mellitus (DM) is an independent risk factor for cardiovascular diseases (CVD), with diabetic patients having 2-4 times higher risk of developing cardiovascular diseases compared to non-diabetic individuals. Conversely, cardiovascular diseases are the leading cause of death in diabetic patients. DM is considered a high-risk factor for CVD, and CVD is a significant factor contributing to mortality in DM patients. After the onset of CVD combined with DM, patients experience abnormalities in both large blood vessels and the heart, affecting myocardium and microvessels. Western medicine often employs insulin and statins to lower blood sugar and protect

the cardiovascular system. However, long-term use of these medications can significantly impact patients' quality of life and mental health and may lead to various side effects.Traditional Chinese Medicine (TCM) approaches these two diseases from a holistic perspective, focusing on syndrome differentiation and treatment. TCM emphasizes treating different diseases with similar syndromes and seeks commonalities in syndromes to find points for crossover treatment of both diseases. This approach has shown precise clinical efficacy. This study focuses on patients with CVD combined with DM and analyzes the application effectiveness of TCM syndrome differentiation treatment.

1. Materials and Methods

1.1 General Information

A total of 74 patients with cardiovascular diseases (CVD) combined with diabetes mellitus (DM) were selected for this study from March 2023 to March 2024 in our hospital. They were divided into a control group of 37 cases and an observation group of 37 cases using a random number table method. In the control group, there were 19 males and 18 females, with an age range of 35 to 79 years and a mean age of (51.54±4.35) years. In the observation group, there were 20 males and 17 females, with an age range of 36 to 80 years and a mean age of (51.64±4.28) years. There were no significant differences in general data between the two groups ($P > 0.05$), indicating comparability.

Inclusion Criteria :Patients admitted to our hospital aged 35-80 years old; good compliance; confirmed diagnosis of coronary heart disease and DM by coronary angiography; normal communication ability; informed consent for participation in this study.

Exclusion Criteria:Patients with mental disorders; presence of malignant tumors; significant abnormalities in important organ functions such as lungs, liver, etc.; immune system diseases; patients who had received glucocorticoid or immunosuppressive therapy before enrollment; intolerance to TCM treatment.

1.2 Methods

1.2.1 Control Group

Patients in this group received standardized Western medical treatment: for diabetes mellitus (DM), insulin was provided or hypoglycemic drugs were selected; for cardiovascular diseases (CVD), statins were prescribed along with aspirin. Lifestyle adjustments were made, including correcting dietary habits, engaging in exercise training, minimizing physical exertion, strictly controlling sugar and fat intake, consuming less fatty meat and offal, actively supplementing vitamins, creating a suitable and relaxing treatment environment, and improving sleep quality. Patients adhered to a regular medication regimen, attended outpatient follow-ups, and the treatment course lasted for 2 months.

1.2.2 Observation Group

In addition to standardized Western medical treatment, patients in this group received combined traditional Chinese medicine (TCM) syndrome differentiation treatment. Based on TCM theory, three syndrome differentiations were identified:Spleen-kidney qi-yang deficiency type:Prescription: Poria cocos 30g, Atractylodes macrocephala 15g, Polyporus umbellatus 30g, Rehmannia glutinosa 20g, Alisma orientale 15g, Salvia miltiorrhiza 30g, Astragalus membranaceus 30g, Codonopsis pilosula 20g, Euryale ferox 15g, Plantago asiatica 15g. Decoction was prepared, and 200ml of decoction was orally administered once daily. The treatment course lasted for 2 months.Liver-kidney qi-yin deficiency type: Prescription: Rehmannia glutinosa (prepared) 15g, Cornus officinalis 10g, Dioscorea opposita 15g, Poria cocos 15g, Alisma orientale 20g, Salvia miltiorrhiza 30g, Pollen typhae 30g, Ophiopogon japonicus 30g, Lycium barbarum 20g, Panax notoginseng 15g, Pueraria lobata 15g. Decoction was prepared, and 200ml of decoction was orally administered once daily. The treatment course lasted for 2 months.Heart-kidney qi-yang deficiency type:Prescription: Modified Wu Ling San combined with Sheng Mai Yin was used for treatment. The prescription included Panax ginseng 10g, Ophiopogon japonicus 20g, Schisandra chinensis 10g, Cinnamomum cassia 10g, Poria cocos 30g, Salvia miltiorrhiza 30g, Semen descurainiae 30g, Polyporus umbellatus 30g, Alisma orientale 15g, and Gallus gallus 30g. Decoction was prepared, and 200ml of decoction was orally administered once daily. The treatment course lasted for 2 months.

1.3 Observation Items and Indicators

Evaluation of electrocardiogram (ECG) and blood glucose indicators: The former includes the magnitude of T-wave changes and ST-segment elevation, while

the latter includes fasting blood glucose (FBG), 2-hour postprandial glucose (2hPG), and glycated hemoglobin (HbA1c) levels. The assessment of quality of life: The Short Form 36 (SF-36) questionnaire was used, covering 8 domains, each scored from 0 to 100.

1.4 Statistical Methods

Data were analyzed using SPSS version 27.0. Measurement data are presented as mean (± standard deviation), and the independent samples t-test was used for comparison. A significance level of $P < 0.05$ was considered statistically significant.

2. Results

2.1 Comparison of Cardiac Function and Blood Glucose Indicators between the Two Groups

The magnitude of T-wave changes and ST-segment elevation in the observation group were both significantly higher than those in the control group, while FBG, 2hPG, and HbA1c levels were significantly lower than those in the control group, with statistical significance ($P < 0.05$). See **Table 1** for details.

Table 1: Comparison of Cardiac Function and Blood Glucose Indicators between the Two Groups [$n(\bar{x} \pm s)$]

Group	Number	T-wave Changes (mV)	ST-segment Elevation (mV)	FBG(mmol/L)	2hPG(mmol/L)	HbA1c(%)
Observation Group	37	0.19±0.03	0.17±0.24	6.68±1.06	10.18±1.23	7.16±1.11
Control Group	37	0.08±0.01	0.07±0.02	8.57±1.20	12.74±1.38	8.26±1.26
t	/	21.159	2.526	7.180	8.424	3.985
P	/	0.000	0.014	0.000	0.000	0.000

2.2 Comparison of Quality of Life between the Two Groups

Comparing the SF-36 scores in 8 domains, the observation group scored higher in all domains compared to the control group ($P < 0.05$). See Table 2 for details.

Table 2: Comparison of Quality of Life between the Two Groups[$n(\bar{x} \pm s)$]

Group	Number	Mental Health (Score)	Role Emotional (Score)	Social Functioning (Score)	Vitality (Score)
Observation Group	37	72.45±4.35	70.15±4.28	71.24±4.49	73.26±5.41
Control Group	37	63.56±4.28	62.78±4.18	63.30±4.42	66.25±3.94
t	/	8.861	7.493	7.666	6.371
P	/	0.000	0.000	0.000	0.000

Continuation of **Table 2:** Comparison of Quality of Life between the Two Groups [$n(\bar{x} \pm s)$]

Group	Number	Physical Health (Score)	Bodily Pain (Score)	Role Physical (Score)	Physical Functioning (Score)
Observation Group	37	72.52±4.28	72.26±4.62	73.26±3.41	71.68±4.35
Control Group	37	61.50±4.18	62.35±3.94	61.36±3.75	64.19±4.23
t	/	11.205	9.928	14.281	7.509
P	/	0.000	0.000	0.000	0.000

3. Discussion

3.1 Overview of CVD Combined with DM

With changes in dietary structures, increasing aging populations, and alterations in social environments accompanied by high mental stress, the incidence of cardiovascular diseases (CVD) combined with diabetes mellitus (DM) has risen, becoming a public health issue . CVD is a non-communicable, chronic disease primarily induced by atherosclerosis, which causes blood vessel narrowing and impedes smooth blood flow, leading to related symptoms. Due to coronary heart disease, blood flow struggles to pass through narrowed areas, causing myocardial ischemia. Arrhythmias, characterized by irregular heartbeats, may occur due to abnormalities in excitation sequences and conduction blockages. Common symptoms of CVD include chest tightness and pain, palpitations, nausea, vomiting, and shortness of breath; in severe cases, it may result in shock or syncope. CVD has various risk factors, including environmental factors, obesity, and chronic diseases such as DM .DM is a significant risk factor for CVD, leading to chronic hyperglycemia.

DM can be triggered by poor lifestyle habits, family genetics, adverse environments, and excessive alcohol consumption, which may lead to obesity. Prolonged excessive alcohol intake can damage the pancreas and interfere with insulin secretion, while long-term smoking can result in abnormal blood glucose levels.

3.2 Integrated Treatment of CVD Combined with DM in Western and Traditional Chinese Medicine

For patients with CVD combined with DM, Western medicine typically treats each condition separately. Coronary heart disease is primarily managed with medications and interventions aimed at dilating blood vessels, preventing platelet aggregation, lowering lipid levels, stabilizing plaques, and inhibiting ventricular remodeling. Diabetes management focuses on effective blood glucose control through oral hypoglycemic agents or insulin injections.Traditional Chinese Medicine (TCM) views CVD combined with DM as falling under the categories of "Xiaoke" (wasting-thirst) and "Xiongbi" (chest obstruction), and recent studies have also referred to it as "Tangxindisease" (diabetic heart disease). The etiology and pathogenesis in TCM mainly include two aspects: diet and emotional factors. Excessive intake of sugary foods and lack of moderation in diet, as well as emotional distress and overwork, can lead to internal heat generation.In TCM, DM is considered a form of "Xiaoke disease," with the excess type primarily due to overeating and excessive sugar intake, while the deficiency type is mainly associated with spleen deficiency and impaired transportation and transformation functions. The core pathogenesis revolves around yin deficiency and dryness-heat. The etiological factors of DM in TCM include overexertion and dietary irregularities, which, when combined with the intake of rich, greasy foods, can damage the spleen and stomach, leading to internal heat. Additionally, excessive emotional stress and indulgence in desires can lead to wasting-thirst, and improper treatment may result in other complications. In TCM treatment, a holistic approach is taken to address the condition through syndrome differentiation and treatment, using herbal medicine to achieve comprehensive regulation. This involves tonifying qi and nourishing yin, warming yang and strengthening the spleen, with the addition of blood-activating and stasis-resolving herbs to improve microcirculation. Integrating TCM can effectively alleviate physical and psychological discomfort, regulate bodily circulation, and improve myocardial blood supply. This is evidenced by the elevation of the depressed ST segment and the enhancement of T-wave changes, as well as stable blood glucose control, leading to significant improvements in ECG and blood glucose indicators.

3.3 Analysis of Research Results

The results of this study indicate that compared to the control group, the observation group showed higher T-wave changes and a more depressed ST-segment elevation, along with lower levels of FBG, 2hPG, and HbA1c ($P < 0.05$). This suggests that combined traditional Chinese medicine (TCM) treatment based on syndrome differentiation can improve myocardial blood supply, inhibit the progression of cardiovascular disease (CVD), and effectively control blood sugar levels. Additionally, the SF-36 scores in all 8 domains were higher in the observation group ($P < 0.05$), indicating that integrating TCM treatment based on syndrome differentiation can reduce the occurrence of angina pectoris, improve quality of life, alleviate psychological anxiety, prevent disease progression, and enhance physical fitness and daily life adjustment. This demonstrates that the application of TCM treatment based on syndrome differentiation can enhance the efficacy of CVD combined with DM treatment, improve both physical and mental states, and promote disease remission.

In summary, providing TCM treatment based on syndrome differentiation to patients with CVD combined with DM can effectively improve blood glucose indicators and electrocardiogram results, enhance quality of life, and has generalizable value. However, due to limitations such as sample size, study duration, and study population, there are still several shortcomings in this research. Therefore, future studies should further strengthen the control of sample size and demographics to confirm the accuracy of the results.

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