

Case Report

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Traditional Chinese medicine in the treatment of heart failure: A case study

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Introduction

With the aging of the population, the incidence of chronic diseases such as coronary heart disease, hypertension, diabetes, obesity is on the rise, and the improvement of medical level, the survival time of patients with Cardiovascular Disease (CVD) is prolonged, resulting in a continuous increase in the prevalence of heart failure (HF) [1]. The increasing number of patients around the world suffering from HF indicates the need for innovative strategies for more effective prevention and treatment.

Traditional Chinese Medicine (TCM) generally applies some natural plant products including dietary factors or herbal medicines [2]. HF is a cardiac injury caused by various heart disease factors, leading to changes in cardiac function and myocardial structure, and eventually leading to decreased ventricular pumping and filling capacity [3]. As the end stage of various CVD, HF is an important factor leading to death of patients. As such, there is growing awareness of the role of TCM in the prevention of HF and the possibility of their use in treatment.

Abstract

Heart Failure (HF) is one of the most common diseases with the aging of population, that indicates the need for innovative strategies for more effective prevention and treatment. We herein describe a 81-year old male patient with HF, heart and kidney Yang deficiency, and who underwent Traditional Chinese Medicine (TCM). After one course of TCM, the symptoms were significantly improved. TCM is characterized by "Holistic regulation," and "Syndrome differentiation based treatment". TCM treatment of HF can significantly improve the clinical symptoms, and ameliorate the therapeutic effect with high safety, so it is quite valuable for clinical promotion and application.

Keywords: Heart failure; Traditional Chinese medicine; Heart and kidney yang deficiency.

Case presentation

A 81-year old male patient visited the outpatient department of cardiovascular in the Traditional Chinese Medicine Hospital. The chief complaint was "Exertional chest tightness, progressive shortness of breath for 8 years".

The patient has a history of coronary heart disease, long-term standard aspirin, atorvastatin, ramipril. In the past 8 years, the disease gradually worsened. In light physical activities, chest tightness, shortness of breath, intermittent edema of face and lower limbs occurred, and every time tiredness, irregular diet, cold or seasonal change occurred, the symptoms worsened, and the patient was hospitalized repeatedly. There was no history of hypertension and no family history of cardiovascular disease.

The patient was chest tightness and palpitation, shortness of breath and panting, heavy limbs, easy fatigue, aversion to cold, less absorption, poor sleep, little urination, shapeless stools.

He had a poor spirit and purplish dark lips, low breath sounds

in both lungs, little rales in right lung base. The heart rate was 92 beats/min, the heart rhythm was uniform, the heart tone was low, the mitral valve auscultation area has murmurous. Mild edema of lower extremities; tongue light fat, moss white, string like and rough pulse. TCM diagnosis: heart and kidney Yang deficiency, water stasis and stagnating.

Therapeutic method of TCM: warm Yang, disinhibit water and promote Qi. We prescribed a formula consisting of fuzi (radix aconiti lateralis preparata), tinglizi (semen lepidii), guizhi (ramulus cinnamomi), chuanxiong (ligusticum wallichii), chao baizhu (rhizoma atractylodis macrocephalae), taizishen (radix pseudostellariae), fuling (poria cocos) (Figure 1).

This prescription is provided by the traditional Chinese medicine pharmacy of our hospital. The dosage and use of granule are stable, with small unpleasant smell and high bioavailability. Dosage: take the above granule, put it in the same container, stir boiling water to dissolve (300 ml), and take it twice a day (4 weeks/course).

After one course of treatment: the symptoms of chest tightness and shortness of breath were significantly improved after taking the dosage, the urine volume increased, limb edema alleviated, appetite and sleep well, and the stool was formed. A repeated echocardiography demonstrated changes in heart cavity size before and after treatment (Figure 2).

Discussion

TCM is characterized by “Holistic regulation,” in which the organism is considered as a whole, and it uses holistic and synergistic approach to restore the balance of Yin-Yang of body energy so the body's normal function can be restored [2,4]. With the equilibrium of the human body as the guidelines, practitioners of TCM not only pay attention to the suffered diseases itself, but also pay more attention to the diseased patients.

HF is a chronic developed process. It is a group of clinical syndromes caused by various cardiac structural or functional diseases, resulting in cellular and molecular disorders and abnormal hemodynamics [1,3]. In the theory of TCM, the pathological changes of HF belong to the category of Yang deficiency or water stasis. Yang deficiency takes the Qi vacuity as its core and on the basis, the insufficiency of Qi and Yang, and the insufficiency of Yang Qi can be expressed. Stasis in vessel refers to poor water or blood flow, water or blood viscosity, or network vessel damage based on the inhibited Qi dynamic. Treatment involves quickening the water, freeing the vessels and boost Qi. In the later stage, water obstruction and more severe damage to vessels requires a time to break water, expel the stasis and promote Qi. Stagnating in vessels means an inhibited Qi dynamic, which suggests a need to move Qi and quicken the water.

These TCM herbal remedies in the formulas have been studied using modern cellular and molecular techniques. Fuzi (radix aconiti lateralis preparata) can be explained by action on the voltage-sensitive sodium channels and voltage-dependent potassium current on myocardial cell membranes [5]. Fuzi was used to boost Qi, warm and supplement Yang, combined with guizhi (ramulus cinnamomi) to free Yang and promote Qi transformation. Tinglizi (semen lepidii) can increase heart output, slow heart rate, reduce venous pressure, its mechanism are including the inhibition of RAAS and sympathetic nervous system activity, reduction of neuroendocrine, and slowing down the development of HF [6]. Tinglizi was to disinhibit water and disperse swelling, fuzi and tinglizi were added to warm Yang and disinhibit water.

Taizishen (radix pseudostellariae) can increase left ventricular filling pressure, improve cardiac function, and inhibit the elevation of creatine kinase and other enzymes, playing a major role in the protection of cardiac ischemia reperfusion [7]. Taizishen was used to supplement the heart and kidney Qi, and chao baizhu (rhizoma atractylodis macrocephalae) was to assist it. Fuling (poria cocos), chao baizhu, guizhi and chuanxiong (ligusticum wallichii) can inhibit TNF-alpha expression and serum NF-beta and IL-1 levels in the myocardium of rats with chronic HF, thereby preventing chronic HF and inhibiting ventricular remodeling by regulating cytokine network and interfering with the pathological process of chronic HF [8-11]. Fuling (poria cocos) was taken to disinhibit water. Chuanxiong (ligusticum wallichii) was applied to quicken the blood, transform stasis, free the network vessels, and promote Qi. We combined the seven medical herbs to transform stasis, supplement Qi and reinforce Yang. TCM had been provided for HF patients with coronavirus disease (COVID-19) according to symptoms and signs [12].

“Syndrome differentiation-based treatment” is another feature of TCM, which means diagnosis and treatment based on an overall analysis of the illness and practitioners timely modify



Figure 1: The medicine of our formula. (A): fuzi (radix aconiti lateralis preparata), (B): tinglizi (semen lepidii), (C): guizhi (ramulus cinnamomi), (D): chuanxiong (ligusticum wallichii), (E): chao baizhu (rhizoma atractylodis macrocephalae), F: taizishen (radix pseudostellariae), G: fuling (poria cocos).

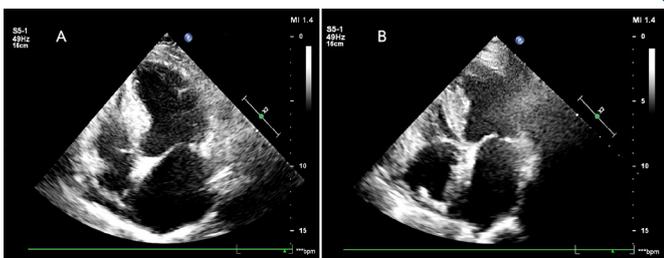


Figure 2: Echocardiography before and after treatment. The repeated echocardiography demonstrated changes in heart cavity size before and after treatment. A: before the TCM treatment, B: after the TCM treatment.

formulae in accordance with the varying syndromes and clinical manifestations [2]. Thus, it is an individualized treatment for different patients even with the same disease. The feature of individualized intervention with minimum adverse effects makes TCM would be a good choice and will continue to make great contributions to the health of HF patients.

Conclusion

TCM treatment of HF can significantly improve the level of TCM clinical symptoms, and then ameliorate the therapeutic effect with high safety, so it is quite valuable for clinical promotion and application.

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