

Experience in Treating Viral Myocarditis with Master Lei's Huoxue Decoction

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Abstract: Modern medical treatment of viral myocarditis by suppressing viral replication and improving cardiomyocyte metabolism has a good effect on the acute infectious period of viral myocarditis, but the curative rate is poor, especially the sequelae of viral myocarditis, which often lingers for years to decades. The use of traditional Chinese medicine can achieve a certain curative effect by promoting the positive and dispelling evil spirits as well as balancing yin and yang. After long-term observation, it is found to have clear effect on improving myocardial injury caused by viral myocarditis.

Keywords: Viral myocarditis; Yangxin Huoxue decoction; Myocardial injury; Traditional Chinese medicine

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1. Introduction

Viral myocarditis is a common condition in clinical practice. It occurs in infancy and adolescence, especially in young adults^[1]. It is generally believed that the disease is caused by viral infection, namely Coxsackie B virus, resulting in local or diffuse inflammatory changes in cardiomyocytes, which can be presented as anxiety, chest tightness, fatigue, dizziness, headache, and breathing difficulties. The diagnosis of viral myocarditis depends on endomyocardial biopsy^[2], but due to low acceptance rates among patients, clinical reliance is often placed on a history of viral infection and the subsequent diagnosis of viral myocarditis after excluding other factors, such as ischemia-induced cardiovascular disease symptoms. The clinical manifestation of the disease varies; mild symptoms can be cold-like or asymptomatic, whereas severe cases may lead to dilated cardiomyopathy, heart failure, severe arrhythmia, or even sudden death.

2. Understanding viral myocarditis from the perspective of traditional Chinese medicine

Although there is no specific term for viral myocarditis in the classics of traditional Chinese medicine, it is under the category of "chest obstruction," "palpitation," and "consumptive disease" based on its symptoms. Viral myocarditis can also be classified as "epidemic febrile disease." In Ye Tianshi's "Treatise on Febrile Diseases," it is stated that "the warm pathogen first invades the lung and is transmitted retrograde to the pericardium." This refers to a type of pathogenic factor with warm-heat nature that invades the human body from the mouth and nose and is then transmitted to the pericardium meridian of hand-jueyin through the lung meridian of hand-taiyin. The term "retrograde transmission" indicates that it is different from the traditional mode of transmission of infectious diseases^[3]. It is mentioned in "Plain Questions on Arthralgia^[4]" that "if the pulse is arthralgia, you will feel the evil again, and you will give up in the heart." This

coincides with modern medicine's understanding of viral myocarditis, wherein it is the pathological characteristic of myocardial cells that have been damaged by viral infection.

3. Yangxin Huoxue decoction

Heart-Nourishing and Blood-Activating decoction was introduced by Master Lei Zhongyi ^[5]. The prescription is composed of 10 grams of ginseng, 15-20 grams of Radix Ophiopogonis, 10 grams of Fructus Schisandrae, 10 grams of Citri Reticulatae Pericarpium, 30 grams of Radix Salviae miltiorrhizae, and 3 grams of notoginseng powder (taken with water). Yangxin Huoxue decoction was originally used to treat coronary heart disease and myocardial infarction, which are due to the injury of both qi and yin, the accumulation of phlegm, and blood stasis. It has the effects of benefiting qi and nourishing yin, resolving phlegm, as well as activating blood circulation ^[6]. After Master Lei Zhongyi's long-term clinical observation, it is found that Yangxin Huoxue decoction can be used for a variety of heart diseases after flexible addition and subtraction; in addition, it can also nourish the myocardium and improve myocardial metabolism in myocardial injury as a result of myocarditis.

4. Etiology, pathogenesis, and principles of treatment

Suwen "Ping Re Bing Lun" states that "where evil gathers, qi will be deficient." In the early stage, viral myocarditis is often caused by the invasion of heat toxin and dampness toxin into the vessels of the heart due to the six exogenous pathogenic factors and the deficiency of healthy qi ^[7]. If it lasts for a long time, it will damage the heart yin and consume the heart qi, resulting in the deficiency of heart yin, the deficiency of both qi and yin ^[8], or the deficiency of both yin and yang ^[9]. It belongs to the syndrome of deficiency in origin and excess in superficiality. The symptoms are fatigue, shortness of breath, palpitation, chest tightness, and dull pain. The disease is caused by the lack of innate endowment or the imbalance of cold and warm, improper diet, and excessive fatigue, which may lead to the deficiency of healthy qi, thus giving rise to the affliction of warm pathogens. In principle, the treatment should be based on clinical stages. In the early stage, the treatment should focus on clearing away heat and toxic materials as well as eliminating dampness. In the later stage, the treatment should focus on benefiting qi, nourishing yin, and strengthening healthy qi. In the mid-stage ^[10], both pathogenic factors and healthy qi should be taken into account. Drugs should be selected according to the rise and fall of pathogenic factors and healthy qi, so as to eliminate pathogenic factors without damaging healthy qi or strengthen healthy qi without eliminating pathogenic factors.

5. Example cases

5.1. Case 1

The patient's details are as follows: Wang; male; 26 years old. The date of his first visit was on October 12, 2019. His chief complaint was paroxysmal palpitation, shortness of breath, dizziness, and fatigue for a year. One year ago, the patient developed symptoms due to a cold and went to a local hospital to seek treatment. After examination, he was diagnosed with viral myocarditis. After treatment, his symptoms improved. Over the past one week, he again developed palpitation, chest tightness, dizziness, shortness of breath, and fatigue due to a cold. After self-medicating with cold medication, his symptoms persisted. Although he had good appetite, he did not sleep well and experienced irregular passing of stools and urine. He felt weak most of the time and was intolerant to cold temperatures. From physical examination, his blood pressure was noted to be 110/70 mmHg, his heart rate was 80 beats per minute, with irregular rhythm; early beats were heard, and his heart sounds were slightly low and dull, without any murmur heard; there were no significant findings from lung examination. Troponin I (TnI) was negative, and electrocardiogram revealed ventricular premature beats. Upon examining his tongue and pulse, the patient was noted to have a dark red tongue

with a thin white coating along with deep and thready pulse. From the perspective of TCM, the diagnosis was palpitation (syndrome of deficiency of both yin and yang and blood stasis), whereas the diagnosis of viral myocarditis was made from the perspective of western medicine. The patient was treated based on the method of nourishing yin and tonifying yang, promoting blood circulation, as well as removing blood stasis. The patient was prescribed with a modified Heart-Nourishing and Blood-Activating decoction, which is composed of 18 grams of *Radix pseudostellariae*, 15 grams of *Fructus Forsythiae*, 10 grams of *Radix isatidis*, 15 grams of *Radix Sophorae flavescens*, 15 grams of *Nardostachyos Radix et Rhizoma*, 20 grams of *Radix Rehmanniae*, 30 grams of *Radix Salviae miltiorrhizae*, 15 grams of *Radix Paeoniae Rubra*, 10 grams of *Fructus Schisandrae*, 10 grams of *Radix Angelicae Sinensis*, 15 grams of *Poria*, 15 grams of *Cortex Polygalae*, 20 grams of *Semen Ziziphi spinosae*, and *Radix Morindae*. A total of 7 doses were administered, with a dose each day, decocted with water. The patient was advised to rest and not to tire himself out. On October 12, 2019, the patient came for follow-up. He claimed that his palpitation, chest tightness, fatigue, dizziness, and cold intolerance were relieved. After removing *Forsythia*, another 7 doses were administered. One week later, the patient's palpitation, chest tightness, and fatigue were resolved. Following that, 10 grams of *Atractylodes macrocephala* and 10 grams of *Saposhnikovia divaricata* were added to benefit qi, protect the exterior, and consolidate the curative effect.

Viral myocarditis can be a local or diffuse inflammation of the heart caused by the infection of myocardial cells by Coxsackie B virus. In addition to anti-infection, myocardial nutrition, and symptomatic treatment, modern medicine often has no other effective treatment measures^[11]. In traditional Chinese medicine, it is believed that the pathogenesis of viral myocarditis involves pestilences invading the heart through the transmission of defensive qi, nutrient, and blood, while consuming heart yin and heart yang^[12], thus resulting in the weakening of healthy qi^[13]. The sequelae of myocarditis can be appreciated in this case, in which healthy qi has been damaged and both yin and yang are deficient. Therefore, the symptoms were mainly chest tightness, shortness of breath, and fatigue. The main therapeutic principle is to strengthen the body resistance. The prescription given was a modified Yangxin Huoxue decoction^[14]. *Pseudostellaria heterophylla* can invigorate qi and yin, strengthen the body resistance, as well as eliminate pathogens. *Ophiopogon japonicus* and *Schisandra chinensis* are often used as drugs in the treatment of myocardial damage and heart yin consumption to restore heart qi and heart yin. *Radix Rehmanniae* can nourish yin and blood to make yin and blood have source. *Radix Sophorae flavescens* and *Nardostachyos Radix et Rhizoma* are often used for arrhythmias caused by myocardial cell damage in myocarditis. Studies have shown that both *Radix Sophorae flavescens* and *Nardostachyos Radix et Rhizoma* have anti-arrhythmic effects. They are often used in combination with *Concha Margaritifera* or *Os Draconis* and *Concha Ostreae* to calm the heart and nerves, restore pulse, as well as relieve palpitation. *Radix Morindae Officinalis* and *Herba Epimedii* can tonify kidney-yang to warm heart-yang and mobilize the body's yang-qi. Qi deficiency leads to weak blood circulation, while fire deficiency reduces body fluid, refines fluid, and causes blood stasis. Hence, *Salvia miltiorrhiza*, red paeony root, and angelica were included in the prescription to promote blood circulation and remove blood stasis, nourish yin, as well as tonify deficiency. Studies have shown that *Salvia miltiorrhiza* has the pharmacological effects of regulating myocardial energy metabolism and restoring damaged myocardial cells, while *Radix Glycyrrhizae Preparata* has the pharmacological effects of nourishing yin, activating yang^[15], as well as warming and tonifying qi. It also has curative effects for palpitation and pulse stagnation caused by the deficiency of heart qi in viral myocarditis. In this case, the patient's heart qi was damaged and heart yin was consumed; hence, the patient found it difficult to fall asleep due to vexation from the deficiency. *Polygala tenuifolia*, *Poria cocos*, and *Semen Ziziphi spinosae* were included in the prescription to relieve restlessness, soothe nerves, and help the patient with his insomnia^[16].

5.2. Case 2

The patient's details are as follows: Liu; female; 23 years old. The date of her first visit was on March 17, 2020. Her chief complaint was paroxysmal palpitation, chest tightness, and shortness of breath for 3 years, which aggravated over the past one week. The patient's paroxysmal palpitation, chest tightness, and shortness of breath without exertion started three years ago. At that time, she sought treatment from another hospital. Dynamic electrocardiogram showed sinus rhythm, 28 times of long R-R interval greater than 1.5 seconds, and second-degree type II atrioventricular block. There were 1,922 supraventricular premature beats, 27 paroxysmal supraventricular tachycardia, and 40 paroxysmal supraventricular bigeminy. She was diagnosed with viral myocarditis after a series of biochemical investigations. Subsequent dynamic electrocardiogram showed frequent atrial premature beats, paroxysmal atrial tachycardia, and paroxysmal atrial fibrillation. After four months of antiviral and myocardial nutrition treatment, the patient's symptoms were alleviated, and the antiviral was stopped. Nearly a week after catching a cold, her palpitation, chest tightness, and shortness of breath recurred, accompanied by sore throat, discomfort, and sweating. The patient then sought traditional Chinese medicine therapy. In the past, the constitution was general. She experienced paroxysmal palpitation, chest discomfort, shortness of breath, fatigue, sore throat, feelings of hot and cold, sweating, reduced appetite, and insomnia. Upon examination, she had pale red tongue with thin white coating, and her pulse was thready and weak; her blood pressure was 110/770 mmHg; bilateral lungs were clear, with no significant enlargement of heart boundaries; her heart rate was 78 beats per minute with irregular rhythm and multiple early beats; she had normal heart sounds, with no pathological frame sound in each auscultation area; no abnormal findings from abdominal examination, and no edema in both lower extremities. Her ECG showed sinus rhythm, with multiple atrial premature beats. The TCM diagnosis was palpitation, whereas the diagnosis made based on western medicine was viral myocarditis with arrhythmia (frequent atrial premature beats, paroxysmal atrial fibrillation, and second-degree type II atrioventricular block). The TCM syndrome differentiation was qi deficiency and blood stasis. The therapeutic method was based on supplementing qi, activating blood circulation, nourishing heart, as well as relieving palpitation. She was prescribed with 10 grams of Bupleurum, 10 grams of Scutellaria, 10 grams of Pinellia, 15 grams of Pseudostellaria, 24 grams of Cynanchum paniculatum, 10 grams of Cimicifuga, 10 grams of Sophora tonkinensis, 15 grams of Nardostachys chinensis, 10 grams of Platycodon grandiflorum, 15 grams of Scrophularia, 15 grams of Ophiopogon, 10 grams of Oroxyllum indicum, 30 grams of oyster (decocted first), 30 grams of lily, 10 grams of lotus seed, 10 grams of Glycyrrhiza, 15 grams of Acorus calamus, and 30 grams of Salvia miltiorrhiza. She was given six doses, decocted in water for oral administration, and one dose a day. During her second visit on March 24, 2020, her sore throat and feelings of hot and cold resolved, but the patient still felt flustered, with chest tightness, shortness of breath, and fatigue. Lei Zhongyi, a traditional Chinese medicine practitioner, pointed out that the patient's cold symptoms were basically relieved although there were still premature beats. The prescription was changed to Yangxin Huoxue decoction, which includes 18 grams of Radix Pseudostellariae, 15 grams of Radix Ophiopogonis, 10 grams of Fructus Schisandrae, 10 grams of Pericarpium Citri Reticulatae, 30 grams of Radix Salviae miltiorrhizae, 3 grams of Radix Notoginseng powder, 30 grams of Radix Astragali, 15 grams of Radix et Rhizoma Nardostachyos, 30 grams of Concha Ostreae (decocted first), 15 grams of Rhizoma Acori Calami, 30 grams of Bulbus Lillii, and 20 grams of Pericarpium Trichosanthis. She was given six doses, decocted in water for oral administration, and one dose a day. During her third visit on March 31, 2020, she had no palpitation, chest tightness, and shortness of breath, but she still had occasional premature beats, fatigue, anorexia, and abdominal distension. 20 grams of Radix Codonopsis pilosulae, 10 grams of Rhizoma Zedoariae, and 15 grams of stir-fry malt were added to the prescription. Similarly, six doses were given, decocted in water for oral administration, with one dose a day. On April 7, 2020, she complaint of occasional palpitation and chest tightness, with no obvious shortness of breath; her fatigue and appetite

improved. One month later, dynamic electrocardiogram showed 328 supraventricular premature beats without any long intervals. Her condition was stable. In TCM, viral myocarditis belongs to the invasion of toxic heat. If treated in time, it can delay the development of the disease^[17]. Otherwise, toxic heat will invade the heart, resulting in chest tightness, palpitation, and other symptoms. In the later stage, various syndromes occur due to the impairment of qi, blood, yin, and yang of the heart. The patient was a young woman who had been ill for a long time and was in the chronic stage of myocarditis. Due to the recurrence of cold, she experienced symptoms of upper respiratory tract infection, exterior excess, and interior deficiency. Therefore, it is important to first relieve the exterior and tonify the deficiency. When the exterior pathogenic factors have been removed, Yangxin Huoxue decoction can then be used to regulate the heart's qi and blood, remove blood stasis, as well as resolve phlegm, so that the toxic pathogenic factors will be removed, with sufficient healthy qi, and eventually leading to recovery^[18].

In terms of clinical modification, for patients in the early stage of infection, the decoction is often combined with Radix Isatidis, Folium Isatidis, Fructus Forsythiae, etc. to clear away heat and toxic materials, or with White Hyacinth Bean and Semen Coicis to eliminate dampness and detoxify. In the mid-stage of the disease, the pathogenic factors compete with each other and invade the heart, so it is necessary to strengthen the body's resistance and eliminate the pathogenic factors^[19]. For its sequelae, patients with low immunity, having lingering illness, and high risk of recurrence, Yupingfeng Powder can be used to strengthen qi and consolidate the exterior to prevent infection^[20].

Disclosure statement

The authors declare no conflict of interest.

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