The effect of shexiang tongxin dropping pill on coronary microvascular dysfunction assessed by stress perfusion cardiac magnetic resonance: A case report

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Abstract
Although Coronary Microvascular Dysfunction (CMVD) is clinically prevalent, its therapeutic efficacy data remains uncertain. We report a 62-year-old female CMVD patients whose condition improved after Shexiang Tongxin dropping pill treatment, as confirmed by stress perfusion cardiac MRI. This case emphasizes that Shexiang Tongxin dropping pill is typically effective in the treatment of CMVD. It can not only alleviate symptoms, but also ameliorate microvascular function. Traditional Chinese medicine is a good choice for the treatment of microvascular angina.

Keywords: Coronary microvascular dysfunction; Microvascular angina; Shexiang tongxin dropping pill; Stress perfusion cardiac magnetic resonance; Case report.

Introduction
With the development of imaging technology, CMVD has attracted more and more attention [1]. The mortality of CMVD patients was 3.93 times higher than that of normal people, and the incidence of adverse cardiovascular events was 5.16 times higher [2]. In the past five years, seven related guidelines and expert consensus have been issued one after another [3-9]. However, the treatment of CMVD is still limited to controlling the traditional risk factors of atherosclerosis, improving lifestyle and alleviating the symptoms of angina pectoris [4]. The results of large sample randomized clinical trials with CMVD are still lacking. We found that traditional Chinese medicine is an effective method to treat CMVD in clinical treatment. The purpose of this study is to provide evidence for a new treatment scheme for CMVD.

Case presentation
A 62-year-old woman (165 cm 72 kg) presented with chest tightness and chest pain for 8 months. It used to mainly occur under the sternum radiating to back pain during fatigue, activity, lasting for 1-10 minutes each time, which can be relieved after rest. No history of smoking or drinking. No history of depression and anxiety. She was menopausal at 45 years old. For 5-year history of hypertension, she took irbesartan and diltiazem for reducing blood pressure, and her blood pressure was controlled at 130-140/80-85 mmHg. For 8-years history of hyperlipidemia, she took rosuvastatin for treatment (LDL-C was controlled at 1.26-2.34 mmol/l).

Figure 1: The electrocardiogram. The electrocardiogram showed abnormal changes in ST-T (ST-T segment depression in V3-V5).

Figure 2: Invasive coronary angiography.

Figure 3: Stress perfusion CMR. (A) Rest and stress imaging contouring. (B) Rest and stress SI curve. (C) Polar map demonstrates.

Follow up

At 1 month, the symptoms improved significantly, the number of attacks decreased, and he was able to work normally (Table 1). At 6 months, the patient had no chest discomfort for 1 month. Re-examination of stress myocardial perfusion cardiac MRI showed an area of perfusion defect in the left ventricle under the endocardium and a decreased MPRI (1.97). At 12 months, she had only two minor chest pains during housework in the past 6 months, and the degree of chest pain was lessened than before. Re-examination of stress myocardial perfusion cardiac MRI showed few perfusion defects in the left ventricle under the endocardium and a normal MPRI (2.41).

Discussion

Although the 2020 European Expert Consensus provided guidance on the diagnosis and treatment of CMVD [4], there remains great challenges in the management of patients with microvascular angina. Some patients with CMVD were not effectively treated because they did not have obstruction in the epicardial coronary artery. On the other hand, the choices of drugs for CMVD are still very controversial. The 2019 European Guidelines for Chronic Coronary Syndrome [9] and the 2020 European expert consensus [4] proposed that Angiotensin Converting Enzyme Inhibitor (ACEI), Calcium Channel Blockers (CCB), β-blockers, statin and Ranolaxine can be selected for the treatment of CMVD, and nitrates and Nitrate drugs are used as second-line drugs. The 2017 China expert consensus recommends Nicorandil as the drug of choice, and ranolazine and ivabradine can be used as alternative treatments [3]. However, these drugs cannot solve all the problems.

We found in clinical practice that traditional Chinese medicines such as Shexiang Tongxin Dripping Pills is good choices. The mechanism may be related to the increase in endogenous nitric oxide production and the decrease in leukocyte adhesion [10,11]. Moreover, Shexiang Tongxin Dropping Pills can improve CMVD through anti-inflammatory, anti-apoptotic, and anti-oxidant mechanisms [12,13].

Declarations

Acknowledgement: Thank you very much for patient’s willingness to share her experience.

Statement of ethics: We have obtained written informed consent from participants to publish the details of their medical cases.

Conflict of interest statement: None.

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Table 1: Follow up.

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Author contributions: Jingwen Yong and Jinfan Tian were responsible for the writing of the draft article and the follow-up of patients. Song Xiantao revised the article.

Data availability statement: All the data used are presented in the article.

References


