

Clinical Application and Progress of Modified ShaofuZhuyu Decoction in the Treatment of Primary Dysmenorrhea with Cold Coagulation Blood Stasis

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Abstract

Primary dysmenorrhea is a common gynecological disease in clinical practice. Patients with primary dysmenorrhea would have obvious clinical symptoms such as soreness in waist, backpain, and bearing-down pain in the lower abdomen before, during and after menstruation, which could reduce their quality of life. Compared with Western medicine treatment, there are relatively many ways to treat it with Chinese medicine, and the long-term treatment effect is better. Primary dysmenorrhea could be divided into different syndromes according to its symptoms in traditional Chinese medicine. Primary dysmenorrhea with cold coagulation blood stasis (CCBS) is one of the common syndromes in traditional Chinese medicine, which usually treated with ShaofuZhuyu Decoction (SFZY). SFZY could release pain and reduce the synthesis and release of prostaglandins, improve hemorheological indicators, and reduce its recurrence rate. This article briefly analyzes the understanding of traditional Chinese medicine on the pathogenesis of primary dysmenorrhea with CCBS. The formula of SFZY, the modern pharmacology of SFZY and its clinical effect in the treatment of primary dysmenorrhea with CCBS cold were analyzed in this paper.

Keywords

Primary dysmenorrhea, cold coagulation blood stasis, ShaofuZhuyu decoction, Clinical application

Introduction

In recent years, the incidence of primary dysmenorrhea is on the rise, and it has become one of the important diseases affecting women's health. At present, the pathogenesis of primary dysmenorrhea is still not clear. Western medicine believes that it is closely related to genetic factors, prostaglandin, mood swings, and the adoption of oxytocin. Prostaglandin inhibitors and contraceptives are recommended to treat this disease, which could alleviate the pain of patients to a certain extent. However, long-term use of the above drugs may increase the risk of adverse reactions, improve its drug resistance, and then affect its overall therapeutic effect. In recently, with the continuous improvement of traditional Chinese medicine (TCM), TCM syndrome differentiation treatment shows more advantages in the clinical treatment of various gynecological diseases comparing with Western medicine, such as less adverse reactions. According to the classification of primary dysmenorrhea, TCM mainly divides it into cold coagulation blood stasis (CCBS) type, damp-heat blood stasis type, Qi and blood deficiency type, liver and kidney de-

iciency type, Qi stagnation and blood stasis type. Clinically, CCBS is more common [1-2]. Relevant studies have indicated that modified SFZY could significantly improve the therapeutic effect of primary dysmenorrhea with CCBS, which could effectively improve local microcirculation, regulate endocrine, diminish inflammation and ease pain [3].

1. Pathogenesis of primary dysmenorrhea with CCBS in TCM

TCM believes that the pathogenesis of primary dysmenorrhea with CCBS could be analyzed from the deficiency and excess [4]. Firstly, deficiency leads to pain due to insufficient Qi and blood in liver and kidney. Qi and blood are closely related. Qi is the driving force of blood circulation, and blood is the carrier of Qi movement. Sufficient Qi and blood ensure the unobstructed movement of Qi and blood in the body. If Qi and blood are deficient, the uterus will be overwhelmed, the Qi and blood will be more insufficient during menstruation, then the symptoms of dysmenorrhea will appear. The liver controls the blood, while the kidney controls the essence. The liver and kidney are closely related to the essence and blood, which are the foundation of menstruation. If the liver and kidney are deficient, the essence and blood will be insufficient, Chong and Ren channels will be imbalanced due to deficient Qi and blood during menstrual period, which will aggravate dysmenorrhea symptoms. Secondly, obstruction leads to pain, mainly including cold coagulation and blood stasis. Among them, cold is a Yin pathogen, which is the main reason for pain and stagnation. If the constitution is cold or infected with external cold, the uterus, Chong and Ren channels will be blocked by cold qi and blood, which will cause dysmenorrhea. The occurrence of blood stasis will aggravate the obstruction of Qi and blood, the vicious circle will lead to aggravation of dysmenorrhea. To sum up, the cold pathogen is an important cause of primary dysmenorrhea with CCBS. When the cold pathogen invades the body, the healthy Qi begins to resist, while deficient Yang and over cold pathogen will lead to the failure of righteous Qi defending cold pathogen. In the long run, the Qi and blood in the body's meridians are blocked, resulting in blood stasis and inducing dysmenorrhea.

2. Prescription analysis and modern Pharmacology of SFZY

SFZY comes from the ancient TCM work *Corrections on the Errors of Medical Works* (Yilin Gaicuo), and its main ingredients are cumin, dried ginger, corydalis tuber, myrrh, angelica, chuanxiong rhizoma, Chinese cinnamon, red peony root, pollen typhae and trogopterus dung, which has the effect of warming meridians and relieving pain, promoting blood circulation and removing blood stasis, usually used to treat blood stasis, cold coagulation and blood stasis. From the perspective of TCM, cumin in SFZY has the effect of dispelling cold and relieving pain, warming kidney and nourishing Yang. Dried ginger could nourish Yang and clear channels, warm the middle and dispel cold. Corydalis tuber has the effect of promoting blood circulation and Qi movement. Myrrh has the effect of promoting blood circulation and removing blood stasis. Angelica could nourish blood and promote blood circulation. Chuanxiong rhizoma has the effect of promoting Qi and blood circulation. Chinese cinnamon has the effect of promoting blood circulation, dispelling cold and relieving pain. Red peony root could remove blood stasis and relieve pain. Pollen typhae has the effect of removing stasis and stopping bleeding. Trogopterus dung has the effect of removing blood stasis and stopping bleeding, promoting blood circulation and relieving pain. Throughout the whole recipe of SFZY, the compatibility of 10 traditional Chinese medicines is reasonable, which could not only exert the effects of promoting blood circulation and removing blood stasis, warming meridians and dispelling cold to the greatest extent, but also invigorating the kidney and blood, achieving the therapeutic purpose of eliminating pathogenic factors without harming the healthy Qi [5]. According to modern pharmacological research, cumin, dried ginger, corydalis tuber and other components in SFZY have good pharmacological effects of anti-inflammatory and pain relieving, accelerating blood circulation, inhibiting platelet aggregation, and enhancing immunity. During the treatment of primary dysmenorrhea with CCBS, it was found that SFZY could significantly improve the overall therapeutic effect and improve the prognosis [6].

3. Clinical effect of modified SFZY on primary dysmenorrhea with CCBS

3.1 Modified SFZY could effectively relieve pain

Primary dysmenorrhea is also called functional dysmenorrhea, which is included in the concept of *Abdominal pain during menstruation* in TCM. Modern medical research believes that the occurrence of primary dysmenorrhea is closely related to the increase of endometrial synthesis and prostaglandin in women during menstruation period [7]. The increase of prostaglandin will accelerate the contraction of uterine smooth muscle, which leads to uterine artery vasospasm and causes hypoxia and ischemia of uterus, pain neurons will be stimulated and dysmenorrhea

symptoms aggravated. Therefore, how to inhibit the synthesis and release of prostaglandins is particularly important. According to the modern pharmacological research, cumin, dried ginger, corydalis tuber other ingredients in SFZY could diminish inflammation and relieve pain effectively. More than that, trogopteris tuber contains pyrocatechol and benzoic acid, which has the pharmacological effects of improving immunity, inhibiting bacteria and removing inflammation, as well as relieving smooth muscle spasm. The component of Chinese cinnamon in SFZY could not only effectively inhibit the contraction frequency, contraction degree and contraction activity of the normal uterine smooth muscle in mice, but also has a good anti-oxytocin effect. It could also reduce the biological activity of thromboxane A₂ and inhibit biosynthesis of prostaglandin, which could reduce the contraction of uterine smooth muscle, and then achieve the purpose of improving dysmenorrhea and therapeutic effect [8]. LI Ping compared the effects of Tongjingbao Granules and SFZY in the treatment of primary dysmenorrhea with CCBS, the results showed that total effective rate SFZY was higher than Tongjingbao Granules (97.80% vs 83.52%) [9]. The visual pain analogue scale (VAS) scores of 1 day before menstruation, 1 day after menstruation, and 2 days after menstruation treated with SFZY were lower than treated with Tongjingbao Granules [(1.12±0.34) vs (2.21±0.46)], [(4.22±1.06) vs (5.68±1.24)] and [(3.02±0.93) vs (4.28±1.19)] respectively, which indicates that the modified SFZY could significantly reduce the pain caused by primary dysmenorrhea with CCBS, and improve the overall therapeutic effect.

3.2 Modified SFZY could effectively regulate hemorheology indexes

The *Blood stasis* of primary dysmenorrhea with CCBS is closely related to the hemorheology in modern medicine. Hematocrit, platelet adhesion rate, whole blood viscosity, plasma viscosity are all important indicators of primary dysmenorrhea with CCBS. In previous clinical applications, it was found that SFZY could effectively regulate the hemorheological indexes of primary dysmenorrhea with CCBS. Because the dried ginger in SFZY is mainly composed of non-volatile oil and volatile oil, corydalis tuber is composed of non-alkaloid and alkaloid, and red peony root contains flavonoids, red paeoniflorin and other chemical components. Chuanxiong rhizoma contains polysaccharides, volatile oil, alkaloid and other chemical components. The combination of the above four drugs could maximumly improve blood circulation. Meanwhile, angelicain SFZY could effectively increase the blood flow of the uterus, reduce the viscosity of whole blood, and improve the coagulation function of the body. Myrrh could protect the coagulation function. The Chinese cinnamon contains cinnamaldehyde, cinnamic acetate and other chemical components, which have anticoagulant pharmacological effects. Pollen typhae contains alkanes, sterols, flavonoids and other chemical components, which could accelerate the blood circulation of body and inhibit aggregation of platelets. The combination of all the above drugs could effectively improve the blood rheology of primary dysmenorrhea with CCBS. CHEN Zhuo compared the clinical effects of Ibuprofen sustained release capsules and SFZY in the treatment of primary dysmenorrhea with CCBS [10], the results showed that the hematocrit, platelet adhesion rate, whole blood viscosity and plasma viscosity in SFZY group were lower than that of the Ibuprofen-capsule group [(38.92±5.51)% vs (45.88±5.15)%], [(27.97±3.05) vs (37.17 ± 4.02)%], mPa/s, [(7.75±1.18)mPa/s vs (9.18±1.18)mPa/s], and (1.37±0.53)mPa/s vs (1.77±0.52)mPa/s] respectively, which indicates that the modified SFZY could significantly improve the hemorheological indexes of primary dysmenorrhea with CCBS.

3.3 Modified SFZY could effectively improve TCM symptom scores

For patients with primary dysmenorrhea of cold blood stasis type, in addition to severe abdominal pain during menstruation period, blood clots, oligomenorrhea, dark period blood may also be accompanied, some patients even have loose stools, vomiting, etc. Therefore, other Chinese medicines could be added into the SFZY or removing some components from SFZY to treat primary dysmenorrhea with different syndrome.

For patients with oligomenorrhea, prepared rehmannia root and suberect spatholobus stem could be added into the SFZY to achieve the therapeutic purpose of nourishing Yin and blood, as well as clearing meridians. As to patients with blood clots and poor menstruation, safflower, peach kernels and dry body of *Hirudo* could be added to relieve pain and promote blood circulation. Regarding to patients with severe abdominal pain, frankincense and prepared meliatoosendan could be added to clear meridians and relieving pain. For patients with breast pain, turmeric and vinegar-prepared cyperi rhizoma could be added to regulate menstruation and relieve pain, as well as to soothe the liver and relieve stagnation. Rhizoma curculiginis and *lindera aggregata* could be added to invigorate Qi, dispel cold, warm and nourish kidney-Yang. For patients with loose stools, poriacocos, codonopsis and *atractylodes macrocephala* could be added to achieve the purpose of relieving diarrhea, tonifying the spleen and invigo-

rating Qi. If patients have vomiting, tangerine peel and fructus amomi could be added to regulate Qi and stop vomiting. GONG Yang et al. [11] performed a study to analyze the TCM symptom scores of primary dysmenorrhea with CCBS treating with the modified SFZY. Before treatment, the TCM symptom score was (21.43 ± 8.03) , the TCM symptom score decreased to (5.30 ± 3.40) after treatment. It indicated that the treatment of primary dysmenorrhea with modified SFZY could significantly improve the TCM symptom score with good long-term curative effect.

4. Discussion

Primary dysmenorrhea with CCBS is a common type of dysmenorrhea in TCM. Its pathogenesis is closely related to Qi and blood deficiency, liver and kidney deficiency, cold coagulation, blood stasis, etc. Warming the meridians and dispelling cold is the principle of treating this kind of dysmenorrhea. As it mentioned above, compared with western medicine treatment, modified SFZY has good therapeutic effect in treating primary dysmenorrhea with CCBS, which could effectively reduce the pain degree, regulate blood rheology, and improve TCM symptom scores.

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