

Research progress of traditional Chinese medicine in the prevention and treatment of dyspepsia following spleen stomach weakness

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Competing interests

The authors declare no conflicts of interest.

Abbreviations

TCM, traditional Chinese medicine; IEI, inborn error of immunity; CMV, cytomegalovirus; MTL, motilin; SS somatostatin; GAS, Gastrin.

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Abstract

Dyspepsia is a clinical syndrome caused by gastric motility disorder, including gastroparesis and esophageal reflux disease. Dyspepsia of spleen stomach weakness type is the most common TCM syndrome type in clinic. TCM has unique advantages in the prevention and treatment of spleen stomach weakness dyspepsia. This paper summarizes the research progress of TCM in the prevention and treatment of spleen stomach weakness dyspepsia in recent years, discusses its mechanism and advantages, and analyzes the existing problems, so as to provide research ideas and directions for TCM to further prevent and treat the disease and improve human quality of life.

Keywords: traditional Chinese medicine (TCM); spleen stomach weakness; dyspepsia; review

Background

For the clinical manifestations of indigestion with weak spleen and stomach, refer to the consensus opinions on the diagnosis and treatment of indigestion in TCM 2010 [1] abdominal distension after eating, early satiety, poor appetite, belching, mental fatigue, insomnia and dreaminess, loose stool, light tongue texture, fat tongue body with teeth imprints, thin and white tongue moss and attenuate pulse.

The weakness of spleen and stomach is closely related to the occurrence of dyspepsia. Dyspepsia is a clinical syndrome caused by gastric motility disorder, including gastroparesis and esophageal reflux disease. Dyspepsia following spleen stomach weakness type is the most common TCM syndrome type in clinic. Just as *Su Wen-Zang Qi Fa Shi Lun* says: "Spleen disease, deficiency leads to abdominal fullness, bowel ringing, and indigestion". Dyspepsia is a complex symptom that can occur in a variety of diseases, involving the stomach and duodenum. Its clinical manifestations are often abdominal pain, burning sensation and postprandial fullness [2]. In the theory of TCM, dyspepsia refers to discomfort symptoms such as abdominal pain, abdominal distension, belching, loss of appetite and nausea, which belongs to ruffian flatulence, stomachache, stomach noise." [3] Indigestion with weak spleen and stomach damages people's quality of life and even leads to emotional diseases. Therefore, in-depth study on the pathogenesis, prevention and treatment of spleen stomach weakness dyspepsia is of great significance to improve the quality of human life.

In recent years, a large number of clinical and animal experiments have shown that TCM has unique advantages in the prevention and treatment of the disease, which can not only regulate the function of spleen and stomach, but also regulate the emotion of patients and improve the quality of life of patients [4]. This paper reviews the research progress of TCM in the prevention and treatment of spleen stomach weakness dyspepsia in recent years.

Pathogeny

The pathogenic factors of spleen stomach weakness dyspepsia can be divided into external and internal causes. External causes mainly include: feeling external evil and dysfunctional diet and living habits. Internal causes mainly include: emotional injury, body and viscera interaction, etc.

external cause

The spleen belongs to Tai yin. It likes dryness and hates dampness. Excess dampness will injure the spleen. For example, according to *Su Wen*, "If the spleen is disturbed by dampness evil, the spleen will get sick." The evil of fire and heat can be caused by external or internal factors. The evil of warm fire caused by external factors can burn the body fluid and blood and damage the internal organs. As recorded in *Su Wen Zhi Zhen Yao Da Lun*: "All sudden vomiting belongs to fire; all abdominal distensions belong to heat... All spitting sour water and violent diarrhea belong to heat." If you don't eat well in life, it is easy to damage your spleen and stomach. Ming Wang Lun's *Ming Yi Zha Zhe* records: "As long as people don't eat well and live regularly, they will damage their spleen and stomach. If the stomach is damaged, it cannot contain food, if the spleen is damaged, it cannot decompose food. If the spleen and stomach are damaged, it is difficult to contain and decompose food. "Long term alcoholism can cause dampness and heat to injure the spleen, decrease the function of spleen transportation and chemistry, and lead to gastric distention. For example, according to the record of *Su Wen Bi Lun*, "people who drink alcohol will get abdominal distension like a bucket." From here, we can understand that dampness and heat evil will damage the spleen. And according to the study of Li Gao's Experience,

"Maladjustment of physical labor leads to spleen disease, while spleen disease leads to laziness and lying down, limb failure and stool diarrhea; Since the spleen is ill, its stomach cannot transport body fluid alone, so it is also ill." It shows that physical labor disorder will damage the spleen and stomach and affect its normal function.

Internal cause

Emotional factors *Su Wen lifting pain theory* says: "Anxiety makes qi depressed... Thinking leads to the existence of the heart, the return of God, and the stagnation of healthy qi, so Qi will stagnate." If you are melancholy and think too much, the Qi of the spleen will be stagnant, the transportation will be abnormal, and the healthy qi will be injured for a long time.

Interaction of five internal organs According to the theory of TCM, liver, heart, lung and kidney can all affect the spleen, but according to the summary results of current relevant research, it can be found that the most common influence of liver and kidney on the spleen.

According to the theory of TCM, the liver dominates dredging and excretion. The liver not only helps the spleen and stomach to contain food and transport food essence, but also helps the spleen qi and stomach qi to rise and fall, thus completing the digestion and absorption of water and food. However, if the liver Qi is relieved too much, it will arbitrarily suppress the spleen, which will lead to "liver disease affecting the spleen"; If the liver loses its drainage and the Qi is not raised enough, the Qi machine will be blocked and the Qi machine will be depressed, resulting in "earth blocking and wood depression". It can be seen that either excessive or weak liver qi can lead to abnormal drainage function of the liver and imbalance of Qi mechanism, thus affecting the spleen. In addition, modern research [5] found that patients with inborn error of immunity (IEI) have cytomegalovirus (CMV) infection, and CMV virus itself is hepatophilic, but patients are likely to have hepatosplenomegaly and inflammation, which provides the support of modern theory for liver disease transmitting to the spleen.

According to the theory of TCM, the kidney is the foundation of congenital and the spleen is the foundation of postnatal. The two are born of each other. Through clinical observation, it is found that the spleen can generate Qi and blood only by relying on the steaming and warming of kidney yang, so it is said that "Spleen Yang is rooted in kidney yang"; The health of the spleen and stomach depends on the Yang fire of the kidney.

Pathogenesis

The pathogenesis of spleen stomach weakness dyspepsia includes spleen qi deficiency, stomach Yang deficiency, stomach yin deficiency and so on.

Deficiency of temper

Spleen yang deficiency and spleen yin deficiency will eventually lead to spleen qi deficiency, and then affect the normal function of the spleen. Deficiency of Spleen Yang, that is, the deficiency of Yang Qi in the spleen, which will lead to deficiency and cold in the spleen and weaken the Qi of the spleen. Chaoyuan Fang of the Sui Dynasty said in the *Zhu Bing Yuan Hou Lun*: "deficiency of spleen will lead to the accumulation of cold for a long time and the weakness of Spleen Qi, so food cannot be digested". Deficiency of Spleen Yin, that is, deficiency of spleen essence. If there is less essence, it cannot be transformed into temper, which will lead to the deficiency of Spleen Qi.

The spleen dominates transportation and transformation, dominates limbs and muscles, and is the biochemical source of Qi and blood. The realization of spleen function depends on the filling of Spleen Qi. Due to various pathogenic factors, the Qi of spleen is greatly consumed. If the Qi of spleen is insufficient, the spleen function will decline. The functional decline of the spleen is

mainly reflected in three aspects: first, the decline of the function of the splenic transport and transformation of the diet water and valley, which results in the dispersing of the nutrient essence; the water and humidity will stay in the body, causing abdominal distension, loose stool or limb edema; Second, the function of scattered nutrition of spleen decreases, which will lead to limb loss of nutrition, resulting in limb burnout; Third, the function of metaplasia blood decreases, resulting in deficiency of Qi and blood, lack of Zhongqi, so you are in low spirits, less Qi and lazy words, emaciated and sallow complexion.

Deficiency of stomach Yang

The deficiency of stomach Yang, that is, the deficiency of stomach Yang, will lead to the endogenous cold evil, and the cold condensing Qi machine, so the epigastric cold pain; If the stomach qi is weak, the function of the stomach to receive food and convert food into chyme is reduced. If the water and valley do not melt, the stomach will eat less, vomit water or indigestion of food; Yang deficiency and Qi weakness, and the loss of warmth and nutrition in the whole body, then fear of cold, cold limbs, fatigue and fatigue; Yang deficiency and internal cold, body fluid is not injured, then the taste is weakened and not thirsty.

Deficiency of stomach yin

The stomach likes moistening and hates dryness, and its Qi nature is decreased. Deficiency of stomach yin, asthenia heat will be endogenous, stagnation of heat in the stomach, loss of harmony and decline of Qi will lead to hidden epigastric pain and burning sensation, noise and discomfort, and swelling and discomfort; If the stomach is disturbed by asthenia heat and the digestion is fast, there will be a sense of hunger, but the stomach loses Yin and fluid moisture, resulting in delayed reception and transformation, resulting in hunger and no desire to eat; The Qi of the stomach is out of coordination and cannot sink. The stomach qi goes up inversely, showing retching and hiccup; Stomach yin deficiency, Yin fluid cannot be moist upward, then the mouth is dry and the throat is dry; If Yin fluid cannot moisten the intestine downward, the stool will dry.

TCM Prevention of spleen stomach weakness type dyspepsia

Prevention before disease

From the etiology of spleen stomach weakness dyspepsia, the disease is closely related to living habits. Guo Wenjuan [7] summarized that bad eating habits and lifestyle are closely related to weak spleen and stomach dyspepsia. For example, excessive intake of fat can aggravate the symptoms of abdominal distension in patients with weak spleen and stomach dyspepsia, and backward socio-economic status, smoking, drinking coffee and poor living environment can also aggravate or induce weak spleen and stomach dyspepsia.

Prevention of disease and change

Functional dyspepsia will not only cause physical pain, but also cause mental anxiety. Therefore, patients are easy to form emotional diseases, such as depression [8], which requires doctors to carry out auxiliary treatment in the treatment process to prevent the occurrence of emotional diseases. In the process of disease treatment, some scholars [9] take into account both nourishing and calming mind and medicated diet adjustment at the same time of drug treatment. It can also be assisted by sticking, cupping, scraping, medicine bath, acupuncture and massage, which has achieved good results in the prevention and treatment of estrous diseases.

TCM treatment of dyspepsia with weak spleen and stomach

At present, the research of TCM in the treatment of spleen stomach weakness dyspepsia is mainly in TCM or TCM combined

with western medicine and non drug intervention. The dosage form is mainly TCM decoction, including the combination and addition and subtraction of classic prescriptions, self-made prescriptions, and the research of TCM combined with western medicine. In addition, there are some non-drug based therapies in TCM, such as acupuncture, medicine pot, ear acupoint pressing, massage and so on.

TCM decoction

In recent years, studies [10] have found that motilin (MTL) is a kind of gastrointestinal hormone secreted by duodenum and jejunum. The decrease of MTL content will lead to the decline of gastric peristalsis function; The increase of somatostatin(SS) will lead to the decrease of gastric acid, gastrin and PG. Modern pharmacological studies [11–13] have found that Xiangsha Six Gentlemen Decoction can significantly increase plasma MTL and reduce the level of somatostatin in the treatment of spleen stomach weakness dyspepsia, so as to inhibit the rapid peristalsis of the small intestine, promote gastric emptying, and have a significant effect in alleviating the symptoms of spleen stomach weakness. Wang Chong [14] selected 64 patients and divided them into the control group and the observation group. They were treated with morpholine and Xiangsha Six Gentlemen Decoction respectively. The results showed that the total effective rate of the observation group reached 93.75%.

Gastrin (GAS) is mainly secreted by G cells in duodenum, antrum and jejunum mucosa. It contains 17 kinds of amino acid peptides. The loss of GAS will reduce the division and proliferation of cells in stomach and upper intestinal mucosa [15–16], reduce the secretion of gastric acid, and cannot promote the relaxation and contraction of gastric antrum and pyloric sphincter, It leads to the growth of gastrointestinal mucosal cells and the weakening of gastrointestinal motility [17], and prolongs the time of gastric emptying. By a large number of experiments, a study [18] have verified that Huangqi Jianzhong Decoction Combined with Zhishi Xiaopi pill can increase the content of GAS, and has a significant effect in promoting gastric acid secretion, contracting gastric antrum and pyloric sphincter, so as to promote gastric emptying, and then play a therapeutic effect on spleen stomach dyspepsia.

Other studies [19–21] have confirmed that PG has two types: I and II. Among them, PG I comes from the secretion of main cells of gastric fundus gland and mucous neck cells, and PG II also comes from cardiac gland, pyloric gland of gastric antrum and upper duodenum. Serum PG level can effectively reflect the secretion of PG and the state of gastric mucosa. Yang Shaoxin [22] and other scholars found that Wuxing Jianpi Decoction can promote the increase of serum MTL level and reduce the levels of PG I and PG II, which is conducive to improving the symptoms of dyspepsia.

It can be seen that a large number of modern studies have increasingly clarified the pathogenesis of spleen stomach weakness dyspepsia. Pharmacological research makes the action mechanism of TCM visualized and microscopic, which is more in line with the quantitative principles advocated by modern medicine. A large number of clinical practices have also proved that TCM has a good effect in the treatment of spleen stomach weakness dyspepsia.

Characteristic therapy of TCM

Zheng Chaoyi [23] found that massage combined with acupuncture therapy (acupuncture points: Zusanli, Zhongwan, Xiawan, Tianshu, guanyuanhe Pishu and Weishu; massage points: Xiawan, Jianli, Xinshu, Dushu, Geshu, Ganshu and Danshu) can regulate the gastric motility and serum gastrointestinal hormone level of patients. Lu Yan's spleen stomach paste [24] (acupoints: Shenque, Guanyuan and Qihai) has the effect of generating Spleen Yang Qi, being able to transport and smooth gastrointestinal Qi, and eliminating abdominal distension. The total effective rate of treatment is high. Shen Chaoqun[25] and other scholars divided the patients into experimental group and control group. They

were given Jianpi japonica rice porridge and Mosapride tablets respectively. They found that Jianpi japonica rice porridge can effectively improve the common symptoms of epigastric fullness and pain, food less poor appetite and fatigue in patients with dyspepsia, with an effective rate of 92%.

The characteristic therapies of TCM include acupuncture, medicated diet, ear acupoints, cupping, scraping, etc. acupuncture has been widely recognized at home and abroad. It has a unique curative effect in the treatment of spleen stomach weakness dyspepsia. Although the clinical operation process requires a high level of doctors, the cost is low, which is conducive to the wide promotion in the world and reduce medical expenditure. Acupoint sticking and medicated diet, based on the theory of TCM, also have a good effect in the treatment of spleen stomach weakness dyspepsia.

Treatment of integrated traditional Chinese and Western Medicine

Studies [26–27] have found that serum MTL is secreted by chromaffin cells and is mostly distributed in the mucosal lacunae and villi of the duodenum and proximal jejunum of mammals. MTL deficiency will lead to the decline of gastrointestinal motility, the decrease of PG secretion and the prolongation of gastric emptying time. Zhang Yonghong [28] and other scholars found that Baohe oral liquid combined with cisapride can improve the level of MTL and alleviate the symptoms of weakness of spleen and stomach.

Zhu Jie [29] divided 70 patients into control group and observation group. Both groups were treated with Domperidone Tablets, and the observation group was treated with Xiangsha Zhizhu Decoction. It was found that the total effective rate of the observation group was higher than that of the control group. Ye Yi [30] randomly divided 64 patients into control group and study group. They were treated with morpholine and Huangqi Jianzhong Decoction Combined with Zhishi Xiaopi pill respectively. The treatment effect of the control group was significant. Wang Hongzhan [31] found that the self-made prescription was used (prescription composition: 30g coix seed, 15g Dangshen and bergamot, 12g fried Atractylodes macrocephala, 10g Shenqu, 9g fried Fructus aurantii, wood fragrance and perilla stem, 3G licorice) Combined with omeprazole enteric coated capsule, it can have a good therapeutic effect, and the effective rate is 96.0%. Zhao Shixin [32] divided 74 patients into control group and study group. The control group was given domperidone and famotidine, and the study group was treated with Huangqi Jianzhong

Decoction and Zhishi Xiaopi Pill on the basis of routine treatment. After treatment with this prescription, the total effective rate was 93.33%.

The treatment of integrated traditional Chinese and Western medicine is a trend in the development of Chinese medicine. Whether it is the treatment of spleen stomach weakness dyspepsia or other diseases, the treatment of integrated traditional Chinese and Western medicine has a good effect on preventing the disease from becoming serious and preventing recovery after recovery in clinical practice. Therefore, the treatment of integrated traditional Chinese and Western medicine should be extended to the world to benefit more patients.

Summary

The research on the prevention and treatment of spleen stomach weakness dyspepsia by TCM is increasing day by day, and the treatment methods are also diversified. By sorting out the literature on the treatment of spleen stomach weakness dyspepsia, it is found that TCM can significantly improve the quality of life of patients and alleviate clinical symptoms by regulating the content of related hormones, proteases and other chemicals, and then adjust the function of spleen and stomach. However, at present, there are also some problems in the research of TCM in the prevention and treatment of spleen stomach weakness dyspepsia. First, there is no more objective and unified evaluation standard in the evaluation of curative effect. At present, various quality of life scales, syndrome scales and symptom scales are mostly used, mainly based on the subjective judgment of patients, with insufficient accuracy and objectivity. In addition, the recurrent onset of spleen stomach weakness dyspepsia, the current literature research is more short-term curative effect, and the curative effect observation after long-term follow-up is less, so there should be further research in this direction. Finally, from the current literature, the number of cases in most studies is small, the source of disease is also relatively limited, and regional differences are not considered. The research on the prevention and treatment of spleen stomach weakness dyspepsia with TCM has a long way to go. We should give full play to the multi-target and all-round treatment advantages of TCM, further explore its mechanism, and provide new research directions and ideas for the prevention and treatment of this disease in TCM.

The data of the article are summarized in Table 1.

Table 1 The data of the article

author	time (year)	Experience group			Control group		
		Treatment plan	Total number	Total effective rate	Treatment plan	Total number	Total effective rate
Wang Chong	2018	1)	32	93.75%	(1)	32	68.75%
Yang Shaoxin	2019	2)	66	96.97%	(2)	66	80.30%
Wang Di	2020	3)	35	91.4%	(3)	35	71.4%
Zheng Chaoyi	2018	4)	50	78%	(4)	50	48%
Lu Yan	2012	5)	Not mention	85%	(5)	Not mention	Not mention
Shen Chaoqun	2016	6)	50	92%	(6)	45	82.2%
Zhu Jie	2020	7)	35	94.29%	(7)	35	77.14%

Ye Yi	2020	8)	32	93.7%	(8)	32	71.9%
Wang Hongzhan	2017	9)	50	84%	(9)	50	82%
Zhao Shixin	2019	10)	30	93.33%	(10)	30	73.33%

1) Xiangsha Six Gentlemen Decoction; 2) Wuxing Jianpi Decoction; 3) Jianpi Yiwei recipe; 4) Acupuncture and massage; 5) Spleen stomach acupoint paste; 6) Spleen strengthening japonica rice porridge; 7) Domperidone combined with Xiangsha Zhizhu Decoction; 8) Morpholine combined with Huangqi Jianzhong Decoction Combined with Zhishi Xiaopi pill; 9) self drawn formula 10) Domperidone and Famotidine combined with Huangqi Jianzhong Decoction Combined with Zhishi Xiaopi pill. (1) Morpholine; (2) indigestion Tablet; (3) mosapride citrate tablets; (4) Cisapride tablets; (5) not mention; (6) Mosapride tablets; (7) Domperidone; (8) Morpholine; (9) Omeprazole, clarithromycin, amoxic; (10) Domperidone, famotidine.

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