

Mechanism of Shugan Lidan decoction in treating chronic calculous cholecystitis

Rong-yu Gao

Shandong University of traditional Chinese Medicine, 4655 University Road, University Science Park, Changqing District, Jinan City, Shandong Province (Jinan, 250355), China.

Abstract: Chronic calculous cholecystitis is a common clinical medical disease, which is classified as "hypochondriac pain" in traditional Chinese medicine (TCM). It is caused by liver failure and stagnation of liver qi. Therefore, the method of Soothing the liver and promoting bile flow is often used for regulating and harmonizing qi and blood. This paper discusses its mechanism of action, and points out that Shugan Lidan decoction has great effect on the treatment of chronic calculous cholecystitis, especially in the early treatment of the disease and delaying the progress of the disease, which provides help for the clinical treatment of chronic calculous cholecystitis.

Key words: Shugan Lidan decoction; chronic cholecystitis; stone; TCM therapy

Acknowledgments: Not applicable.

Abbreviations: TCM, traditional Chinese medicine

Authors' Contributions: Rong-yu Gao proposed the idea of the paper and wrote the manuscript.

Competing interests: The author declares no competing interests.

Citation: Gao RY. Mechanism of Shugan Lidan decoction in treating chronic calculous cholecystitis. *Gastroenterol Hepatol Res.* 2022;4(2):11. doi: 10.53388/ghr2022-06-053.

Executive Editor: Shao-Hui Geng.

Submitted: 14 April 2022, **Accepted:** 19 June 2022, **Published:** 30 June 2022.

© 2022 By Authors. Published by TMR Publishing Group Limited. This is an open access article under the CC-BY license (<http://creativecommons.org/licenses/by/4.0/>).

Submit a manuscript: <https://www.tmrjournals.com/ghr>

GHR | June 2022 | vol.4 | no.2 |

With the changes of people's daily life and eating habits, the incidence of chronic cholecystitis is on the rise. Its symptoms are often manifested as paroxysmal right upper abdominal discomfort or dull pain, nausea, belching etc, which can lead to a variety of complications. In the later stage, laparoscopic surgery is often used, and the prognosis is not ideal. Therefore, it is of great significance to use traditional Chinese medicine to treat and prevent the disease.

1. Etiology and pathogenesis of chronic calculous cholecystitis

Chronic cholecystitis is a common digestive system disease in modern medicine. It is a chronic inflammation of the gallbladder caused by gallstones, bacterial infection, diet and other factors. The disease occurs rapidly. The clinical symptoms are dull pain in the right upper abdomen, radiating to the right shoulder and back, nausea, loss of appetite Fever, etc. if it is not cured for a long time, it may lead to gallbladder necrosis or perforation and bile leakage, leading to abdominal infection, thus forming digestive system disorders and other complications [1].

1.1 Disease caused by qi stagnation, blood stasis and stagnant heat

According to its clinical symptoms and signs, it can be classified into the category of "pain in the subcostal region" and "distention in gall bladder" in traditional Chinese medicine. Qin Jingming pointed out in the *symptom, etiology, pulse and treatment-general theory of swelling* that "The liver and gall bladder governing wood like free will best. Gall bladder distention is the result of unfree flow of qi"; Chaoyuanfang pointed out in *The treatise on the sources and symptoms of various diseases* that qi and water-fluid stagnation accumulate into masses. And the heat and qi stagnation will not disappear causing distending pain in the sub-costal region and fever", indicating that qi stagnation, blood stasis and stagnant heat are the key to the pathogenesis.

The liver has the physiological characteristics of liking free will and hating to be suppressed. The liver governs the free flow of qi which maintains free flow of qi over the entire body. In case of improper diet, excessive fatty and sweet food will damage the spleen and stomach, resulting in endogenous damp heat, which will lead to unfavorable cardinal mechanism, block the free flow of liver and gallbladder meridians qi and result in damp heat in the liver and gallbladder. Or due to emotional disorders, liver gets suppressed and can't maintain free flow of qi leading to liver qi stagnation. Qi is the commander of the blood. If qi stagnation lasts for a long time and blood circulation is not smooth, the disease will change from qi stagnation to blood stasis [2]. These are the causes of pain in the subcostal region. However, the preference of diet

affects the transportation of spleen and stomach, leading to fire stagnation in the gallbladder for a long time thus stone formats. Liver can't maintain free flow of qi leading to gallbladder qi stagnation. The bile cannot be generated and excreted normally, which is easy to form gallstones if it is deposited here. The gallbladder is a luminal organ, and the stones are easy to stay, resulting in chronic inflammation of the gallbladder.

1.2 Combined deficiency and excess pattern

The pathogenesis of this disease is mainly the transformation from excess pattern to deficiency pattern, resulting in combined deficiency and excess pattern. At the beginning of the excess pattern, it is mostly qi stagnation, which can be transformed into heat stagnation or damp heat under the conditions of improper diet. Over time, it will change from excess pattern to deficiency pattern, and the stagnant heat will lead to the burning of Yin fluid [3], resulting in yin deficiency of the liver and kidney pattern, which can be transformed into yin deficiency depression stagnation pattern. Excessive cold or fatigue damaging qi can cause yang deficiency and stagnation pattern, forming combined deficiency and excess pattern.

2. Composition principles of formulas

The gallbladder likes smooth down bearing. It is appropriate to clear, descend, soothe and unblock following the general treatment principles of "Fu qi likes smooth down bearing" and "Unblocking the fu as reinforcing method for fu diseases"[4]. Traditional Chinese medicine holds that "unblocking removes pain". With reference to the above causes, the treatment should focus on unblocking and descending. It is appropriate to soothe the liver and promote bile flow and to clear heat and eliminate dampness. And those become deficiency pattern for having been ill for a long time should give consideration to nourishing yin and liver and strengthening spleen and regulating qi.

Shugan Lidan Decoction consists of Chinese thorowax root, Orange fruit, Peony root, unprepared Licorice root, Common Aucklandia root, Baical skullcap root, Golden thread, prepared Rhubarb root and rhizome, Inner membrane of chicken gizzard, Turmeric root tuber, Officinal magnolia bark, Hawthorn fruit. For those with stones, adding Inner membrane of chicken gizzard, christina loosestrife, climbing fern spore etc. on this basis. Chinese thorowax root which accesses the liver, gallbladder and lung meridians can soothe the liver and relieve depression and release the exterior with pungent-cool. Pharmacological studies have confirmed that bupleurum root can dilate bile duct, relax bile duct sphincter, stimulate gallbladder contraction, and effectively alleviate the pain caused by stone obstruction and sphincter contraction in patients with

Submit a manuscript: <https://www.tmrjournals.com/ghr>

chronic cholecystitis and gallstones [5]. Orange fruit has the functions of circulating qi and harmonizing the stomach, expanding gallbladder and excreting stones, regulating gastrointestinal movement, antibacterial and bactericidal [6]. Common Aucklandia root accesses the liver meridian and has the functions of removing blood stasis, relieving pain, benefiting the gallbladder, promoting gastrointestinal motility, anti-inflammatory, anti-pathogenic microorganisms, antispastic and analgesia [7]. Turmeric root tuber has the function of circulating and cooling blood. Inner membrane of chicken gizzard has the function of eliminating stones and relieving strangury. Official magnolia bark officinalis has the function of drying dampness. Christina loosestrife has the functions of stone expelling, cholagogic and anti-inflammatory [8].

Chinese thorowax root, orange fruit, Common Aucklandia root and Turmeric root tuber have the effect of soothing the liver and regulating qi. Peony root and Liquorice root regulate and harmonize the liver and spleen. Baical skullcap root, Golden thread, prepared Rhubarb root and rhizome and Sichuan Official magnolia bark can clear heat and eliminate dampness and promote gallbladder and bowel movements. Peony root and Rhubarb root Transform stasis. Common Aucklandia root and Official magnolia circulate qi and harmonize the stomach. Inner membrane of chicken gizzard can strengthen the spleen, promote bowel movements and grind stones. In fact, it is a good prescription for the treatment of chronic calculous cholecystitis. Modern doctors are more flexible in the treatment of this disease, including the addition and subtraction of traditional prescriptions and the use of self-made prescriptions, which have achieved good clinical efficacy, reflecting the principle of "observing the pathogenesis and same treatment for different diseases " in traditional Chinese medicine [9].

3. Action mechanism

3.1 Soothing liver meridian and promoting gallbladder flow

The gallbladder is adjacent to the liver, and there is "bile" in the gallbladder. The liver meridian which belongs to the liver is collateral to gallbladder. The liver and gallbladder mutually correspond with one another. The liver governs the free flow of qi. And the drug Shugan Lidan decoction which accesses the liver and gall meridians can clear away heat and dampness in the middle Jiao and regulate the qi movement of liver and gallbladder, leading to the free flow of qi in liver and gallbladder, making the bile's production and excretion normal and preventing the generation of stones. Soothing liver meridian and promoting gallbladder flow so as to alleviate the degree of pain in the subcostal region, which is called "unblocking removes pain".

3.2 Tonifying qi to strengthen spleen, harmonizing liver and stomach

This prescription also focuses on regulating and harmonizing the liver and spleen. If the qi movement of the spleen and stomach is abnormal, it will affect the liver qi's free flow, resulting in stagnation of liver qi. It can be seen that "the soil blocks the wood" [10]. If the function of the spleen and stomach as well as the essence of water and food's production is normal, there will be a rich source for qi and blood so that the liver can be nurtured. The spleen and stomach have a strong transport function, which can prevent the accumulation of water, dampness and phlegm in the body and remove the stagnation of heat so that the liver qi can flow smoothly.

3.3 Circulating blood and transforming stasis, dissolving and excreting stones

Blood stasis in the liver can block meridian and blood circulation, so it is said that " blood stasis belongs to the liver". This prescription regulates the liver qi to make it free. The normal circulation of blood depends on the promotion and regulation of qi. The circulation of qi leads to the circulation of blood. The circulation of blood leads to the elimination of blood stasis and the pain relief in subcostal region. Some of the drugs in the prescription also have the effect of dissolving stones and expanding the tube to excrete stones, whose effect is remarkable in the early stage of the disease.

4. Clinical efficacy

Weiqifeng [11] divided 132 elderly patients with cholecystitis and cholelithiasis treated from February 2016 to April 2018 into two groups. The control group received surgical treatment. The observation group was given Shugan Lidan Decoction on the basis of the control group. The total effective rate of the observation group was 98.51%, and that of the control group was 87.69%, which was significantly higher than that of the control group. The difference was statistically significant. Mou donghuai [12] randomly divided 80 patients with chronic calculous cholecystitis who received treatment from June 2016 to December 2017 into 40 patients each. Routine treatment was given to the control group, and Shugan Lidan decoction was used to treat the observation group. It was found that the treatment effect of the observation group was better and the clinical symptoms disappeared faster. The data difference was statistically significant ($p < 0.05$). Cheng Xu [13] selected 60 patients with chronic calculous cholecystitis treated from January 2009 to June 2012 as the observation objects. Both groups were given symptomatic treatment and oral Xiaoyan Lidan tablets. On this basis, the observation group was added with Shugan Lidan decoction. After two courses of treatment, the cure rate of the observation group was 73.33% and that of the

control group was 53.33%; The total effective rate was 93.33% in the observation group and 80.00% in the control group. The clinical symptoms and signs were significantly reduced ($p<0.05$) Wangyongzeng [14] randomly divided 89 patients with chronic cholecystitis and gallstones into two groups. The control group was treated with ursodeoxycholic acid, and the observation group was treated with Shugan Lidan Decoction on the basis of the control group. After four weeks, the curative effects of the two groups were compared. The total effective rate of the observation group was higher than that of the control group ($p<0.05$). The analysis data showed that the formula could effectively increase the serum mot level, reduce the levels of Gas and SS, and improve the liver and gallbladder function of the patients.

5. Discussion

Economic development has led to an increase in people's living standards. The increase in the intake of greasy food has led to a significant increase in the incidence rate of chronic calculous cholecystitis. Today, the treatment mainly focuses on anti-inflammatory and analgesic relief, but the recurrence rate is high and it is difficult to cure. Finally, surgical treatment can only be adopted. The recovery period is long and the cost pressure is high. Compared with conventional treatment, traditional Chinese medicine can improve the cure rate of chronic cholecystitis, shorten the average hospital stay and improve the pain score [15]. To sum up, Shugan Lidan decoction has a good effect on chronic calculous cholecystitis, which is worthy of being widely used in clinical practice. However, its use should pay attention to syndrome differentiation and treatment, add and subtract drugs according to the syndrome, and should not be used indiscriminately.

References

1. Xiaolianju Clinical observation on the treatment of chronic calculous cholecystitis with Shugan Lidan Decoction [J]. World latest medical information abstracts, 2015,15 (35): 124
2. Yanshuping Discussion on TCM syndrome differentiation and treatment of chronic cholecystitis [J] Massage and rehabilitation medicine, 2018,9 (08): 58-60.
3. Chen Hongyu, Tian Lin, Yang Qian, Cai yanru, Liu Yongtao Research progress of TCM differentiation and treatment of chronic cholecystitis [J]. Hunan Journal of traditional Chinese medicine, 2016,32 (11): 177-180.
4. Liudechang On the treatment of cholecystitis and cholelithiasis with traditional Chinese medicine [J]. China national folk medicine, 2010,15 (6): 116.
5. Li Wei Effect of Dachaihu Decoction on perioperative patients with Gallstones Complicated with chronic cholecystitis [J] Jilin traditional Chinese medicine, 2016,36 (12): 1227-1230.
6. Wang Hui, Zhong Guoyue, zhangshouwen, hejunwei, Zeng Jinxiang Research Progress on chemical constituents and pharmacological effects of Fructus aurantii Immaturus and prediction and analysis of its quality markers [J]. Chinese Journal of traditional Chinese medicine: 1-22.
7. Weihua, pengyong, Ma Guoxu, xulijia, xiaobacon Research Progress on effective components and pharmacological effects of Aucklandia odorifera [J]. Chinese herbal medicine, 2012,43 (03): 613-620.
8. Lixiuhui Pharmacological action of Lysimachia christinae and identification of common counterfeits [J]. Strait pharmacy, 2011,23 (07): 53-54.
9. Chen Hongyu, Tian Lin, Yang Qian, Cai yanru, Liu Yongtao Research progress of TCM differentiation and treatment of chronic cholecystitis [J]. Hunan Journal of traditional Chinese medicine, 2016,32 (11): 177-180.
10. Panxiaoxia, Bai Xueling, Fan Yu, guodongyan, he surong Theory of simultaneous treatment of liver and stomach and its clinical application [J]. Journal of Shaanxi University of traditional Chinese medicine, 2018,41 (04): 11-13+20.
11. Weiqifeng Clinical observation on treatment of senile cholecystitis and cholelithiasis with integrated traditional Chinese and Western medicine [J]. Guangming traditional Chinese medicine, 2020,35 (19): 3095-3097.
12. Mouhuaidong Observation on the clinical efficacy of Shugan Lidan Decoction in the treatment of chronic calculous cholecystitis [J]. Smart health, 2018,4 (21): 115-116.
13. Cheng Xu Clinical observation on 30 cases of chronic calculous cholecystitis treated with Shugan Lidan Decoction [J]. Western Traditional Chinese medicine, 2013,26 (06): 66-68.
14. Wangyongzeng, mayanrong, liuyusheng, Si Yanling, Zhang Jianbo, sun Ling Analysis of therapeutic effect of Shugan Lidan Tongxie Decoction on patients with chronic cholecystitis and gallstones [J]. Journal of traditional Chinese medicine, 2021,49 (09): 84-88.
15. Shiqianwei, wangguanliang, lishuguang, dongzhiyong Systematic evaluation and Enlightenment of traditional Chinese medicine in the treatment of chronic cholecystitis [J]. Journal of Yunnan University of traditional Chinese medicine, 2011,34 (03): 44-49+55.