

Advances in Traditional Chinese and Western Medicine Research on Bile Reflux Gastritis

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Abstract: *Bile reflux gastritis (BRG) is a specific type of gastritis caused by the reflux of bile-containing duodenal fluid into the stomach, resulting in damage to the gastric mucosa. The clinical manifestations of this disease lack specificity, and its course is often prolonged with a tendency for recurrent episodes. Therefore, inhibiting excessive bile reflux is of great significance for the prevention and treatment of gastritis. Currently, the therapeutic efficacy and prognosis of bile reflux gastritis remain suboptimal, and how to achieve effective treatment and improve patient outcomes has become a key clinical concern. This article systematically reviews relevant literature, summarizes and analyzes clinical studies on traditional Chinese and Western medicine treatments for this disease, aiming to provide references and insights for the management of bile reflux gastritis.*

Keywords: Bile reflux gastritis, Western medicine, Traditional Chinese medicine, Review, Clinical research progress.

1. Introduction

Bile Reflux Gastritis (BRG) is a digestive system disease characterized by the reflux of bile and duodenal contents into the stomach [1], causing inflammation, erosion, and even bleeding of the gastric mucosa. Studies have shown that its incidence rate among chronic gastritis patients is 22.6%, with an overall detection rate of approximately 11.3% [2], accounting for 62% of the risk factors for duodenogastric reflux [3]. This makes it an increasingly important therapeutic target in clinical digestive diseases. Among chronic gastritis patients in China, bile reflux (BR) is a relatively common pathogenic factor. Currently, Western medical treatment mainly focuses on symptomatic management [4]. Some patients experience only relief of clinical symptoms after medication, with symptoms tending to recur. Traditional Chinese Medicine (TCM) treatment emphasizes holistic syndrome differentiation, soothing the liver and benefiting the gallbladder, harmonizing the stomach and descending counterflow. Chinese herbal decoctions, patent medicines, and external therapies such as acupuncture have shown unique advantages in improving symptoms, repairing gastric mucosa, and regulating gastrointestinal function [5]. Therefore, improving the prevention and treatment of this disease can not only effectively alleviate clinical symptoms but also reduce recurrence rates and the risk of malignant transformation to a certain extent. This article reviews recent research on TCM and integrated traditional Chinese and Western medicine treatment of BRG as follows.

2. Advances in Western Medicine Research on BRG

2.1 Pathogenesis

2.1.1 Antireflux Dysfunction of the Gastric Antrum-Pylorus-Duodenum

The anatomical integrity and coordinated motility of the gastric antrum-pylorus-duodenum constitute an important barrier against bile reflux [6]. Under normal circumstances,

pyloric sphincter contraction maintains a certain tension in the pyloric canal, and the pressure within the gastric antrum is slightly higher than that in the duodenum. This pressure gradient effectively prevents the reflux of duodenal contents into the stomach. Pyloric sphincter dysfunction is commonly seen after certain gastrointestinal surgeries, where structural disruption can lead to frequent and massive reflux of duodenal contents, thereby triggering bile reflux. Patients with bile reflux gastritis often exhibit decreased frequency of the migrating motor complex (MMC) [7], pyloric relaxation, and lower intragastric pressure compared to intraduodenal pressure, promoting bile reflux into the stomach. Additionally, gastrointestinal hormones such as gastrin, cholecystokinin, and secretin also participate in coordinating duodenal motility, regulating pyloric tone, and modulating digestive juice secretion. With the gradual adoption of bariatric surgery in China, bile reflux can also be observed after certain metabolic surgeries, including sleeve gastrectomy, one-anastomosis gastric bypass, and Roux-en-Y gastric bypass. Eldredge et al. [8] assessed postoperative bile reflux using biliary scintigraphy and upper gastrointestinal endoscopy, finding that the incidence of reflux was highest after one-anastomosis gastric bypass, followed by sleeve gastrectomy, and lowest after Roux-en-Y gastric bypass. Reflux after sleeve gastrectomy [9] may be related to reduced gastric volume, increased intragastric pressure, vagal nerve reflex due to fundus resection, and diminished physiological postprandial relaxation [10]. Although this procedure does not destroy the pyloric structure, increased intragastric pressure and delayed gastric emptying may also promote the occurrence of bile reflux.

2.1.2 Gallbladder Diseases and Biliary Tract Surgery

The formation of bile reflux is closely associated with gallbladder system diseases and gallbladder/biliary tract surgeries. In therapeutic biliary procedures such as endoscopic sphincterotomy, stent placement, or choledochoduodenostomy, the risk of bile reflux is increased, with choledochoduodenostomy considered a significant risk factor. Chronic cholecystitis and cholelithiasis may also promote the occurrence of bile reflux. The mechanisms

primarily involve impaired gallbladder concentration and contraction function [11], as well as abnormal relaxation of the Oddi sphincter during the interdigestive period. Gallstones can induce papillitis, leading to Oddi sphincter dysfunction, thereby promoting bile reflux. Beltrán et al. [12] conducted a prospective study showing that common bile duct pressure in patients with cholelithiasis was significantly higher than in non-gallstone patients, suggesting that gallbladder disease itself may be a risk factor for bile reflux. In summary, the causal relationship and specific mechanisms between gallbladder/biliary tract surgery and bile reflux require further in-depth investigation.

2.1.3 Bile Reflux and *Helicobacter pylori* (*H. pylori*) Infection

The interaction between *Helicobacter pylori* infection and bile reflux in the pathogenesis of chronic gastritis remains controversial. Traditional views suggest a synergistic pathogenic effect, with *H. pylori* being more common in patients with bile reflux. However, recent studies have proposed different perspectives. Szökő et al. [13] pointed out that elevated intragastric bile acids and altered pH due to bile reflux may affect *H. pylori* colonization; concurrent bile reflux did not significantly exacerbate the severity of *H. pylori* infection-related endoscopic lesions nor promote the progression of gastric precancerous lesions, though upper abdominal pain was more common in such patients. Additionally, spontaneous *H. pylori* clearance has been observed in some patients after gastrointestinal surgery [14], possibly related to increased postoperative bile reflux. Although the mechanistic association remains unclear, clinical studies have shown that eradication therapy in BRG patients with concurrent *H. pylori* infection still contributes to improved clinical recovery rates. In summary, the specific relationship between bile reflux and *H. pylori* infection and its clinical significance still require further research.

2.2 Western Medical Treatment

2.2.1 General Management

Lifestyle intervention forms the foundation of management, with principles similar to those for gastroesophageal reflux disease. Patients should maintain emotional stability, relieve stress and anxiety, avoid late-night eating, and appropriately elevate the head of the bed during sleep to reduce nocturnal reflux [15]. Obesity, especially abdominal obesity [16], is an important risk factor for bile reflux, weight loss can help improve symptoms. Additionally, cholecystectomy is a cause of secondary bile reflux and warrants attention.

2.2.2 Pharmacological Treatment

The damaging effect of bile acids on the gastric mucosa is significantly enhanced in an acidic environment ($\text{pH} < 4$). Proton pump inhibitors (PPIs) such as omeprazole and rabeprazole, although not directly targeting bile, can reduce the damaging effect of bile acids by increasing intragastric pH [17] and provide dual protection for patients with concomitant acid reflux. Although their efficacy in relieving symptoms such as heartburn and epigastric pain has been confirmed in some studies, some opinions suggest that PPIs only exert their effect by altering the pH of the refluxate and are not the

first-line drugs for bile reflux [18]. A treatment course of 4–8 weeks is generally recommended, with adjustments based on the patient's condition. Inappropriate use may be detrimental to disease control, and their definitive efficacy requires further research support.

Ursodeoxycholic acid (UDCA), as a bile component modulator, can promote the conversion of bile components toward a more hydrophilic, less toxic profile, reducing the direct mucosal damage caused by hydrophobic bile acids. In addition to modulating bile composition, UDCA also possesses gastric mucosal repair, antioxidant, and anti-inflammatory signaling pathway inhibitory effects. Clinical studies have shown [19] that UDCA is superior to PPIs in controlling symptoms and disease progression in some patients with secondary bile reflux, with good overall tolerability.

Gastric mucosal protective agents such as rebamipide, teprenone, and sucralfate can enhance gastric mucosal defense and repair through multiple mechanisms, including increasing gastric mucus secretion, promoting prostaglandin synthesis, and stimulating mucosal epithelial regeneration, making them important adjunctive therapeutic agents [20]. Hydrotalcite also possesses both antacid and direct bile salt-binding properties, providing rapid relief of symptoms such as epigastric pain and heartburn [21].

Bile acid sequestrants such as cholestyramine can bind bile acids in the intestine and promote their excretion, thereby reducing the enterohepatic circulation of bile acids and alleviating their chemical damage to the mucosa [22]. However, these drugs may cause compensatory increases in bile acid synthesis. In patients with refractory gastroesophageal reflux disease, some studies have shown that their combination with PPIs can further alleviate symptoms with good tolerability [23].

Since bile reflux is often accompanied by delayed gastric emptying and impaired pyloric coordination, the use of prokinetic agents such as mosapride and domperidone [24] can enhance antral contraction, promote gastric emptying, and coordinate gastroduodenal motility, thereby reducing reflux from a kinetic perspective. They have demonstrated certain efficacy in primary bile reflux.

2.2.3 Surgical Treatment

Surgery may be considered when pharmacological treatment is ineffective. For primary bile reflux, laparoscopic fundoplication [25] can be performed. Secondary bile reflux is commonly seen after gastrectomy or bariatric surgery, with a higher incidence after one-anastomosis gastric bypass. Roux-en-Y gastric bypass [26], due to its effective biliary diversion, is considered an important surgical approach for treating secondary reflux. Other procedures such as hiatal hernia repair, fundoplication, and Braun anastomosis may also be used in selected patients, depending on the reflux mechanism, location, and individual patient factors.

3. Advances in Traditional Chinese Medicine Research on BRG

3.1 Etiology and Pathogenesis

In the theoretical system of Traditional Chinese Medicine, the clinical manifestations of bile reflux gastritis (BRG) can be classified under the categories of [27] “stomach pain” (Wei Wan Tong), “abdominal fullness” (Pi Man), “restless stomach” (Cao Za), “acid regurgitation” (Tun Suan), and “gallbladder disorder” (Dan Dan). The **Suwen·Zhi Zhen Yao Da Lun** records: “When Jueyin governs the heavens... the people suffer from pain in the stomach and heart region,” indicating that the pathogenesis is related to the failure of clear Yang to ascend and turbid Yin to descend, with Liver Wood encroaching upon the Spleen and Stomach Qi ascending counterflow. According to classical TCM theory, internal injury by the seven emotions and dysfunction of the Spleen and Stomach are important bases for disease occurrence. The *Danxi Xinfu·Liu Yu* states: “When Qi and blood are harmonious, all diseases are avoided; once stagnation occurs, all diseases arise,” emphasizing the pathogenic role of emotional constraint. The *Pi Wei Lun* also states: “Internal injury to the Spleen and Stomach gives rise to all diseases,” indicating that Spleen-Stomach deficiency is the source of many pathological conditions.

For bile reflux gastritis, the pathogenetic characteristics belong to the category of root deficiency with branch excess, with Spleen-Stomach deficiency as the root and gallbladder pathogen invading the Stomach as the branch [28]. The core pathogenesis can be summarized as Spleen-Stomach weakness with failure of Stomach Qi to descend harmoniously, leading to Liver Qi stagnation that transgresses and invades the Stomach, causing bile to ascend counterflow. Several physicians have elaborated on this basis: Qiu Mingyi believes that this disease often arises from a constitutionally weak Spleen and Stomach, compounded by emotional internal constraint, leading to disorder of the middle burner Qi movement, failure of the Spleen to ascend clear Qi and the Stomach to descend turbid Qi, with Liver Qi stagnating and transforming into heat, impairing its draining function and causing bile to ascend into the Stomach [29]. Du Tianyin emphasizes Spleen-Stomach weakness as the key to pathogenesis, with Gallbladder fire flaring upward as the manifestation. The disease location is in the middle burner Spleen and Stomach, closely related to the Liver and Gallbladder [30]. The *Suwen·Qi Bing Lun* states: “This person, being indecisive in many deliberations, therefore has Gallbladder deficiency, and Qi overflows upward causing a bitter taste in the mouth,” revealing its close relationship with emotional internal injury [31]. Clinical symptoms such as gastric distension, stomach pain, acid regurgitation, belching, and heartburn are all external manifestations of this pathogenesis. While physicians have emphasized different aspects, clinical treatment should still be based on the specific condition with syndrome differentiation.

3.2 Current Status of TCM Treatment

3.2.1 Herbal Formula Treatment

Current TCM treatment of BRG can be divided into three main perspectives. The first perspective holds that the core of this disease lies in the dysfunction of the middle burner Qi movement, disharmony between the Liver and Spleen, and

failure of Stomach Qi to descend harmoniously. Treatment focuses on soothing the Liver and regulating the Spleen, using pungent opening and bitter descending methods to restore the pivotal function of the Spleen and Stomach in ascending and descending.

Zhang Haihong [32] randomly divided 60 patients diagnosed with chronic gastritis by Western medicine and “Liver-Stomach heat stagnation pattern” by TCM syndrome differentiation into a Chinese herbal granule group (Banxia Xiexin Decoction combined with Sini Powder) and a traditional Chinese herbal decoction group. The comparative study found that both traditional decoctions and granule formulations showed significant efficacy in treating chronic gastritis of the Liver-Stomach heat stagnation pattern.

The second perspective holds that the pathogenesis involves bile stagnating in the Gallbladder, transforming into heat over time, and heat ascending counterflow causing bile to reflux into the Stomach, thus leading to the disease. Therefore, treatment advocates clearing heat and promoting bile flow, harmonizing the Stomach and descending counterflow. Zhao Wenxia commonly uses Yincheng (Artemisia capillaris), Huangqin (Scutellaria baicalensis), and other heat-clearing bile-promoting herbs, combined with Zhiqiao (Citrus aurantium), Yujin (Curcuma aromatica), and other Qi-moving agents [33]. Professor Wang Xun [34] conducted a single-blind study on 96 patients with bile reflux gastritis of the Spleen-Stomach damp-heat pattern, dividing them into a control group (conventional treatment) and an observation group (modified Qingwei Powder treatment), with 48 cases in each group, and compared the efficacy between the two groups. The effective rate in the observation group (95.83%) was higher than that in the control group (81.25%); all syndrome scores were superior to those of the control group, with $P < 0.05$ for all comparisons. It was concluded that modified Qingwei Powder treatment had significant effects in improving symptoms such as gastric distension, uncomfortable defecation, nausea and poor appetite, halitosis and bitter taste, as well as stomach restlessness and acid regurgitation, with a higher overall effective rate.

Multiple clinical studies support this therapeutic approach. For example, Liu Xueqiang et al. [35] used modified Danzhi Xiaoyao Powder combined with Zuojin Pill to treat patients with Liver-Stomach heat stagnation pattern, achieving a total effective rate of 97.22%, significantly superior to the Western medicine control group. Yang Han [36] used Shugan Jiangni Decoction, and Liu Haitao et al. [37] used modified Yueju Wendan Decoction combined with acupoint application, both achieving significant clinical efficacy.

The third perspective advocates that the accumulation of toxic pathogens constitutes an important etiological factor in this disease, which aligns with the modern medical finding that *H. pylori* infection is the most common pathogenic factor in chronic gastritis. Treatment emphasizes clearing heat and removing toxins, transforming turbidity and strengthening the Spleen. Modern pharmacological research has confirmed that single herbs such as Huanglian (*Coptis chinensis*), Baizhu (*Atractylodes macrocephala*), Pugongying (*Taraxacum mongolicum*), and Haipiaoxiao (*Sepia esculenta* shell) [38], as well as compound formulas such as Banxia Xiexin Decoction

and Huanglian Jiedu Decoction [39], possess inhibitory or bactericidal effects against *H. pylori*. Professor Li Diangui established the “Turbid Toxin Theory,” advocating the use of Huangqin, Yincheng, Huanglian, and other herbs to transform turbidity and resolve toxins throughout the course of treatment based on syndrome differentiation [40].

Regarding BRG-related treatment, Chinese patent medicines are diverse in type, offer stability and safety in application, and have a relatively wide clinical scope. Yangwei Granules [41] are mainly indicated for Spleen-Stomach deficiency pattern. Studies have shown that their active components can promote gastric ulcer repair; when combined with Western medicine, they can further reduce inflammatory cytokine levels in bile reflux gastritis patients and increase nitric oxide (NO) content, contributing to mucosal protection and repair. Sanjiu Weitai Granules [42] are mostly used for Spleen-Stomach damp-heat pattern, with effects of clearing heat and drying dampness, promoting Qi circulation and activating blood, and relieving spasm and pain. Pharmacological studies have shown that this drug can regulate inflammatory responses through multi-target modulation of relevant signaling pathways, exerting anti-inflammatory and analgesic effects. Moluodan [43] is suitable for Stomach collateral stasis pattern, with functions of harmonizing the Stomach and descending counterflow, strengthening the Spleen and relieving distension, and unblocking collaterals and relieving pain. Experimental studies have found that it may exert therapeutic effects by regulating gastric juice pH, serum pepsinogen, and inflammatory factors (such as tumor necrosis factor and interleukins), affecting the function of gastrin and somatostatin-secreting cells.

3.2.2 Characteristic TCM Therapies

The team led by Lyu Songtao [44] found through research that in acupuncture treatment, Zhongwan (CV12) and Tianshu (ST25) can regulate Qi and descend bile; Zusanli (ST36) can harmonize the Stomach and inhibit acid to relieve pain; and Yanglingquan (GB34) can clear Liver and Gallbladder fire. These acupoints can better regulate gastrointestinal function, promote gastrointestinal motility, relieve spasm and pain, and reduce inflammation.

Liu Shuaiwei [45] explored the efficacy of warm acupuncture combined with Shugan Jianpi Formula in treating bile reflux gastritis. The study found that the treatment group was superior to the control group in terms of reflux frequency, longest reflux duration, symptom scores, platelet levels, white blood cell counts, TNF- α levels, IL-6 levels, total effective rate, incidence of adverse reactions, quality of life scores, and 6-month recurrence rate.

Some studies have found [46] that moxibustion has definite efficacy in treating Spleen-Stomach diseases. It can achieve anti-inflammatory, reparative, and gastrointestinal motility-promoting effects by regulating the release of inflammatory cytokines, increasing gastrointestinal mucosal blood flow, and improving the expression of relevant proteins. Acupoint application combined with moxibustion is highly safe for treating chronic gastritis and can also regulate gastrointestinal hormone levels [47].

3.2.3 Integrated Traditional Chinese and Western Medicine Treatment

Jin Ming et al. [48] studied the efficacy of Chaihu Shugan Powder combined with ursodeoxycholic acid capsules in treating bile reflux gastritis. The results showed that the combination treatment group was superior to the ursodeoxycholic acid monotherapy group in improving serological indicators, reducing the frequency of bile reflux, and improving quality of life.

Furthermore, Li Ping [49] observed the clinical efficacy of Chaizhi Hewei Decoction in treating bile reflux gastritis of the Liver-Stomach disharmony pattern, finding that the treatment group was superior to the control group in alleviating symptoms such as gastric distension or pain, chest and rib distension or pain, emotion-induced exacerbation, bitter taste, dry mouth, and acid regurgitation.

Finally, Wu Yaping [50] studied the clinical efficacy of modified Chaiqin Wendan Decoction combined with ursodeoxycholic acid capsules in treating bile reflux gastritis with sleep disorders, finding that the combination treatment group was superior to Western medicine monotherapy in improving clinical symptoms, enhancing sleep quality, and reducing the severity of bile reflux and gastric mucosal inflammation.

Multiple clinical studies have demonstrated that integrated traditional Chinese and Western medicine treatment is superior to Western or TCM monotherapy in terms of total effective rate, symptom improvement, endoscopic mucosal healing, and recurrence rate control, with a low incidence of adverse reactions and good patient tolerance.

4. Summary and Prospects

This article systematically reviews the advances in traditional Chinese and Western medicine research on bile reflux gastritis, comprehensively analyzing the disease definition, pathophysiological mechanisms, clinical manifestations and diagnostic criteria, as well as various Western, TCM, and integrated therapeutic approaches and their efficacy and safety. Although existing research provides a wealth of treatment options, some shortcomings remain, such as insufficient long-term efficacy and safety data for certain treatment methods, and the specific mechanisms of integrated TCM-Western medicine treatment remain unclear.

Therefore, future research should focus on the following aspects: first, conducting large-scale, multi-center clinical trials to further validate the long-term efficacy and safety of various treatment methods; second, conducting in-depth investigations into the mechanisms of action of integrated TCM-Western medicine treatment, particularly the interactions between Chinese and Western drugs when used in combination and their impact on the disease; and finally, exploring individualized treatment strategies, developing more precise therapeutic approaches based on specific patient conditions to improve treatment outcomes and reduce adverse reactions.

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