

# ***Overview of the Progress of Clinical Research on Digestive Ulcer Combined with Insomnia in Traditional Chinese Medicine***

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**Abstract:** In recent years, with the increase of people's work, study, life and other aspects of the pressure, the incidence of peptic ulcer combined with insomnia is rising. And now people are paying more and more attention to this problem. Insomnia is a condition in which sleep duration and sleep quality are abnormal. Through the analysis of peptic ulcer combined with insomnia etiology, pathogenesis, pathogenesis characteristics, treatment and prevention, dialectical classification, western medicine and surgical treatment, non-drug treatment and other aspects. Based on people is an organic whole, long-term peptic ulcer problems largely cause physical and psychological problems, so there is a close connection between peptic ulcer and insomnia, to explore the relationship between the two, it is of great significance to the treatment and control of the development of this disease. This paper mainly analyzes the research progress of peptic ulcer combined with insomnia from the perspective of the overall concept of traditional Chinese medicine.

## **1. Introduction**

Peptic ulcer (PU) is a digestive system disease characterized by chronic, periodic, and rhythmic upper abdominal pain, which is caused by the self digestion of the gastrointestinal mucosa [1]. Clinically, patients with peptic ulcers often suffer from sleep disorders. Insomnia primarily manifests as difficulty falling asleep and maintaining sleep, frequently accompanied by fatigue, memory decline, depression, anxiety, and other physical and psychological issues. In Western medicine, it is classified as a neurological disorder, often presenting as sleep disorders [2]. As life rhythms accelerate, people face increasing pressures in learning, work, and daily life. Currently, over 55% of residents in China experience varying degrees of sleep disorders [3]. Peptic ulcers are closely linked to insomnia, influencing each other; as the severity of peptic ulcers increases, sleep disorders become more pronounced, and conversely, insomnia can also lead to the development of peptic ulcers. Sleep is an essential physiological need for humans; adequate sleep duration and quality help restore the immune system, thereby significantly improving work efficiency and learning. Conversely, if sleep function is abnormal, it can result in cognitive decline, memory loss, and trigger cardiovascular diseases, hypertension, gastrointestinal dysfunction, mood disorders, and other conditions. Studies on insomnia

symptoms suggest that they are related to abnormalities in the functions of the five organs, particularly those of the spleen and stomach. The "Suwen: Theory of Reversal" states: "The Yangming channel is the stomach meridian; the stomach is the sea of the six fu organs, and its qi also descends. When the Yangming channel is reversed, it cannot follow its proper path, hence one cannot lie down," thus "if the stomach is not harmonized, one cannot sleep soundly." Traditional Chinese medicine has always started from the holistic concept, dialectical treatment, grasp the unity of man and nature. This paper reviews the etiology, pathogenesis, location, characteristics, treatment and prevention of peptic ulcer and insomnia.

## **2. Analysis of peptic ulcer combined with insomnia from TCM perspective**

Peptic ulcers fall under the category of digestive system diseases. With the continuous changes in lifestyle, people often neglect their diet and living habits, leading to a high incidence of such diseases. The primary pathogenesis is cold deficiency in the spleen and stomach. The spleen and stomach are the pivotal organs for the ascending and descending functions of qi in the human body. Li Dongyuan believed that "internal injury to the spleen and stomach leads to a hundred diseases." If one has a constitutionally weak body, cold deficiency can invade the body, making individuals with spleen and stomach qi deficiency more susceptible to peptic ulcers. Peptic ulcers typically present with upper abdominal pain as the main clinical symptom, often accompanied by sleep disorders. In traditional Chinese medicine, insomnia is referred to as "bu mei," "mu bu mian," "bu de mian," or "bu de wu," which suggests that insomnia is related to an imbalance of nutritive and defensive qi, disharmony of blood and yin, and dysfunction of the five organs. Insomnia is categorized into real and deficient conditions, where real conditions include: heart-liver fire excess syndrome and phlegm-fire disturbing the heart syndrome. Deficient conditions include: heart-spleen deficiency syndrome, heart-kidney disharmony syndrome, and heart-qi deficiency syndrome. Among these, heart-spleen deficiency is the most common and has a strong correlation with peptic ulcers.

### **2.1. Etiology and pathogenesis**

Peptic ulcers and insomnia, though different types of diseases, share many common causes. The main factors can be summarized as follows: (1) External pathogenic invasion: Wind, cold, and dampness obstruct the spleen and stomach, disrupting the normal ascending and descending functions of qi. Dampness accumulates in the middle burner, leading to dysfunction in the spleen and stomach's transformation and transportation processes, insufficient production of qi and blood, and inadequate nourishment of the clear qi to the brain. This results in abnormal mental activity and insomnia; (2) Irregular diet: The spleen is the source of qi and blood production. An irregular diet severely damages the function of the spleen and stomach. Damp-heat obstructs the flow of qi and blood, generating phlegm-heat, which then accumulates in the body's meridians, forming abscesses. If the spleen and stomach are weak, they lack the necessary source of qi and blood production, making it difficult to nourish the heart spirit. When the heart spirit is not properly nourished, insomnia occurs. (3) Emotional distress: Peptic ulcers often present with upper abdominal pain. Therefore, we can analyze this from the perspective that "blockage causes pain, and non-nourishment causes pain." Overall, it is closely related to the liver's failure to regulate qi. The liver is associated with wind and wood, while the spleen and stomach belong to earth. Earth benefits from wood, and when liver qi is obstructed, it easily overacts on the earth of the spleen and stomach. When the liver fails to regulate qi, it invades the spleen and stomach, leading to disharmony between the liver and stomach, and between the liver and spleen[4]. This ultimately results in disordered stomach qi, disrupting the function of the spleen and stomach's central qi mechanism, preventing normal digestion and leading to peptic ulcers. Liver stagnation transforms into fire, disturbing the heart spirit and causing insomnia. (4) Constitutional

deficiency: The kidneys generate essence, which in turn generates marrow. The brain is the sea of marrow. A constitutionally weak body with insufficient kidney essence and both yin and yang deficiencies leads to malnourishment of the brain marrow and restlessness of the heart spirit. From a traditional Chinese medicine perspective, sleep disorders are often caused by the mind not being internally focused. A constitutionally yang-deficient state makes one more susceptible to ulcers. The kidneys govern the storage function, and when kidney qi is abundant, it can exert its warming effect. "The yang qi of the five zang organs cannot be activated without this." If kidney essence is lost and the spleen and stomach are yang-deficient, ulcers may develop.

## 2.2. Location of disease

Peptic ulcers occur in the stomach and are closely related to the liver and spleen. Insomnia primarily affects the heart and is associated with the liver, spleen, and kidneys. Peptic ulcers combined with insomnia often result from abnormalities in liver and spleen function, leading to impaired digestion and transformation. The human body is an organic whole; from this holistic perspective, considering "an uneasy stomach leads to restless sleep" and "all diseases arise from the decline of the spleen and stomach," we analyze that peptic ulcers and insomnia are related to the spleen and stomach.

## 2.3. Etiology

Spleen and stomach yang deficiency is most likely to trigger peptic ulcers. The body's defense function declines, cold causes stagnation, obstructing the flow of qi. Pathogenic factors enter the body, leading to typical upper abdominal pain symptoms, which severely affect normal life. Over time, this can result in decreased sleep function, emotional abnormalities, or psychological issues such as depression and anxiety. The "Ling Shu: Ping Ren Jue Gu" states: "The spirit is the essence of water and grains." If the heart does not receive nourishment, the spirit cannot be at peace. The heart's function in governing consciousness depends on the spleen and stomach's digestive functions; the essence of water and grains nourishes the organs, allowing for regular sleep and wakefulness [5]. Current clinical research suggests that peptic ulcers have multiple contributing factors, aligning with the TCM concept of holistic diagnosis and treatment.

## 2.4. Treatment and prevention

Research has found that patients with peptic ulcers often suffer from sleep disorders, and these sleep disorders are closely related to emotional instability. Many patients with peptic ulcers experience negative emotions due to the recurrence of their condition and prolonged treatment, which significantly affects their sleep quality and, in turn, adversely impacts their appetite. Irregular eating habits and unhealthy lifestyles can exacerbate irritation of the gastric mucosa, thereby worsening the condition of peptic ulcers. When the functions of the spleen and stomach are impaired, leading to a lack of qi and blood production, malnutrition, and inadequate nourishment of the heart spirit, it creates a vicious cycle of sleep disorders, affecting the prognosis of patients [6]. Currently, the treatment for peptic ulcers combined with insomnia primarily relies on Western medicine, but this approach is often ineffective due to recurrent symptoms. Traditional Chinese medicine, however, emphasizes an overall perspective, combining etiology, pathogenesis, disease type, and characteristics to provide targeted treatments. It focuses on prevention before the onset of disease, employing distinctive diagnostic and therapeutic methods based on the principles of yin-yang and the five elements, adapting to seasonal changes, and adopting the concept of "treating before the disease occurs." Traditional medical practices such as acupuncture and moxibustion have been widely applied in the treatment of gastrointestinal diseases, and acupuncture has shown significant efficacy in protecting and repairing

damaged gastric mucosa [7]. Studies have also demonstrated that combining acupuncture with moxibustion at specific points can significantly reduce the incidence and recurrence of peptic ulcers combined with insomnia [8]. Peptic ulcers are more common in winter. Humans and nature form a unified whole. Following the principle of “nourishing yang in spring and summer, nourishing yin in autumn and winter,” one should adapt to the waxing and waning of yin and yang, achieving harmony between them, which brings peace and well-being. In line with the natural cycle, people should regulate their physiological characteristics and emotional changes according to the traits of spring growth, summer development, autumn harvest, and winter storage. Given that winter is characterized by sealing and storing, it is important to prevent cold pathogenic factors from invading the spleen and stomach. This can be achieved through lifestyle habits and dietary adjustments, protecting the functions of the spleen and stomach. When the spleen and stomach are healthy, one can rest comfortably and have a peaceful mind. Winter emphasizes contraction; therefore, people should follow the natural cycle, go to bed early and rise late, maintain adequate sleep, and conserve energy to boost the body’s immune system, thereby resisting external pathogens and effectively preventing ulceration. Food is a crucial source for the transformation of qi and blood in the human body, and diet is the material foundation for maintaining the physiological functions of the five zang organs and six fu organs [9]. The spleen and stomach are the foundation of postnatal health, serving as the source of qi and blood production. Located in the middle burner, they are closely related to the liver, heart, lungs, and kidneys, all of which rely on the transformative functions of the spleen and stomach for nourishment. Human life activities require nutrients supplied through the intake of food by the spleen and stomach. The ability of the spleen and stomach to transform water and grains into essence determines the integrity of the body’s digestive function, thus affecting the ability of various tissues to receive sufficient nutrition. However, if people do not pay attention to their diet, overeating or undereating, consuming excessively spicy, cold, or stimulating foods, or having an unbalanced diet that disrupts the body’s physiological functions, it can lead to a weakened immune system and the onset of diseases. Peptic ulcers are more prevalent in winter. According to the principle of nourishing yin in autumn and winter, foods should avoid cold and coolness and focus on warming tonics to protect the body’s yang energy, thereby preventing the occurrence of ulcer disease. The function of spleen and stomach is normal, and the qi and blood of the human body can be nourished and distributed to the heart meridian, so that the mind is at ease.

### **3. The holistic concept of TCM and the theory of differential diagnosis**

In traditional Chinese medicine, it is believed that humans are an organic whole, born from the energy of heaven and earth, and formed according to the laws of the four seasons, maintaining a high degree of unity with nature. The occurrence of diseases can be analyzed from two perspectives: one is the excessive presence of pathogenic factors, and the other is the deficiency of righteous qi. Simply put, when pathogenic factors are rampant and highly toxic, or when treatment is neglected or improperly administered, the body's immune system weakens, reducing its ability to resist these factors, making it more susceptible to illness. The five organs form an organic whole; any dysfunction in one organ can potentially trigger issues in others. The spleen and stomach are the pivot of the human body, being the place where yin and yang intersect. As an organic whole, a robust flow of qi and blood is the material foundation for ensuring good sleep quality. The spleen and stomach are connected to the heart and brain through meridians, and the heart and spleen have a mother-son relationship. Dysfunction in the spleen and stomach can directly disrupt the clarity of the heart and brain, leading to insomnia. One of the four great scholars of the Jin-Yuan period, Li Dongyuan, advocated the ideas that "the essence of human health lies in the transformation of food and water" and "the foundation of human health lies in stomach qi." In his treatise "Treatise on the Spleen and

Stomach", he states: "When the primordial qi is abundant, it is because the qi of the spleen and stomach is not harmed, thus nourishing the primordial qi; if the foundation of stomach qi is weak, excessive eating will damage the qi of the spleen and stomach, and the primordial qi cannot be replenished, leading to various diseases" [10]. Through the digestive functions of the spleen and stomach, a balance between humans and nature is maintained, achieving a harmonious state of yin and yang. In the context of traditional Chinese medicine, peptic ulcers are categorized as "stomach pain," and based on clinical experience, they are mostly divided into liver-stomach obstruction type, stomach yin deficiency type, blood stasis and qi stagnation type, and spleen-stomach cold deficiency type. Long-term digestive system problems pose a serious threat to human health, causing sleep disorders and affecting people's normal lives. Insomnia falls under the category of "restless sleep" in Traditional Chinese Medicine. From a diagnostic perspective, it is categorized into conditions such as deficiency of both heart and spleen, yin deficiency with hyperactivity of fire, disharmony between heart and kidney, liver stagnation with blood deficiency, timidity due to heart deficiency, internal disturbance by phlegm-heat, and disharmony of stomach qi. Therefore, from an integrative viewpoint, the differential diagnosis for insomnia associated with peptic ulcers often focuses on the liver, spleen, and stomach.

### 3.1. Spleen and stomach cold type

Peptic ulcers combined with insomnia are often due to the invasion of cold-dampness pathogenic factors affecting the spleen and stomach, leading to abnormal digestive function. The "Plain Questions on Acupuncture Techniques" mentions that "when righteous qi is preserved within, evil cannot invade." When the spleen and stomach are weak, their ability to transform and transport nutrients is impaired, resulting in poor gastric qi and insufficient righteous qi. This makes the body more susceptible to pathogens and difficult to eliminate them, ultimately leading to ulcer disease. Treatment should focus on protecting the gastric mucosa, eradicating HP, inhibiting gastric acid secretion, and supporting the body's defenses while eliminating pathogens [11]. The body's ability to resist pathogens weakens, and cold-dampness internally generates, which is characterized by contraction and restriction. On the basis of inadequate qi and blood production, the circulation of blood becomes obstructed, preventing nutrients from nourishing the heart vessels and the brain, causing restlessness. The treatment principle is to warm and tonify the spleen and stomach, nourish blood, and calm the spirit, using modified Huangqi Jianzhong Decoction, supplemented by Guipi Decoction. In this formula, Huangqi, jujube, and licorice tonify the spleen and benefit qi, while cinnamon twig and ginger warm yang and dispel cold, white peony root relieve urgency and pain, and maltose tonify the spleen and alleviate urgency [12]. Additionally, angelica tonifies blood and nourishes the heart, sour jujube seed calms the heart and soothes the spirit, and when combined with longan meat, they tonify the heart blood and calm the mind. Wood incense, which harmonizes qi and awakens the spleen, is also used in conjunction with these qi-nourishing and blood-nourishing herbs to ensure that the tonification does not lead to stagnation [13]. Thus, the heart and spleen are tonified, qi and blood are nourished, and all symptoms naturally resolve.

### 3.2. Fire derived from stagnation of liver-QI type

Zhou Shixing [14] believes that in the early stage of ulcers, liver stagnation transforming into heat is predominant. After ulcer healing, due to emotional disturbances, recurrence is likely. Treatment focuses on soothing the liver and regulating qi, harmonizing the stomach and reducing fire. Chaihu Shugan Powder is used with rhubarb to assist in promoting the flow of stomach qi and reducing fire. For severe qi stagnation pain, Jiaolingsi Powder is combined; for acid regurgitation, Zuo Jin Wan is used; for food stagnation, stir-fried barley sprouts and shenqu are added. If there is stasis, Yujin and



Xuanhu can be added. In cases of peptic ulcers with insomnia, in addition to soothing the liver and regulating qi, Longdan Xiegan Decoction is modified to clear real fire from the liver and gallbladder [15]. By adding stir-fried jujube seeds and night-blooming jasmine, blood is nourished and the spirit is calmed. This approach aims to treat liver stagnation transforming into fire, which is a yang pathogen with an upward nature, easily causing wind and blood movement, disrupting the circulation of qi and blood. By soothing the liver and reducing fire, combined with methods to calm the spirit, this condition can be improved.

### 3.3. Type of QI-stagnation and blood stasis

In the "Clinical Guide to Medical Cases", it states that "if stomach pain persists and recurs frequently, there must be phlegm and stasis accumulation." It suggests that if qi stagnation persists over time, the spleen fails to function properly, gradually generating dampness and phlegm. If prolonged pain penetrates the network vessels, leading to stasis obstruction, then phlegm and stasis will intertwine, exacerbating stomach pain. The human body is an organic whole that requires coordinated operation of all organs to maintain physiological activities. Qi stagnation and emotional distress are significant triggers for peptic ulcers, while internal blood stasis and obstructed meridians also play a role. When circulation is blocked, pain occurs; blood stasis and qi stagnation lead to impaired circulatory function, affecting the transformation and transportation functions of the spleen and stomach, as well as the liver's function of free flow. Anger harms the liver, which loses its free flow, disrupting the stomach and causing it to lose its harmonizing and descending functions. From a holistic perspective, this can further affect the heart's function in governing blood vessels. Sleep disorders are most closely related to the heart's function in governing blood vessels and the liver's function of free flow. Treatment primarily focuses on promoting blood circulation and removing stasis, regulating qi flow, using Xiaoxiao Powder combined with Danshen Decoction for symptomatic treatment [16]. In the formula, Wu Ling Zhi promotes blood circulation and removes stasis, while Pu Huang resolves stasis and stops bleeding. If there is severe stasis, additional herbs such as Dang Gui, Chai Shao, Chuan Xiong, Tao Ren, Hong Hua, and Danshen can be added to enhance the effects of promoting blood circulation and removing stasis. From a holistic perspective, when sleep disorders occur, herbs like stir-fried sour jujube seed, Yuan Zhi, and Fu Shen can be used to nourish the heart and regulate the spleen and stomach, balancing cold and heat, harmonizing yin and yang, and collectively promoting blood circulation and resolving stasis, regulating qi flow, achieving the effects of removing stasis and generating new tissue, nourishing the gastric mucosa, repairing ulcers [17], and calming the mind, all working together to treat peptic ulcers with blood stasis and qi stagnation combined with insomnia.

## 4. Western medicine and surgical treatment

Firstly, peptic ulcers refer to inflammatory reactions and necrosis of the digestive tract mucosa under the influence of various pathogenic factors, leading to ulcer formation. The damage can penetrate deep into the muscular layer of the mucosa or even reach the lamina propria [18]. In severe cases, complications such as bleeding, perforation of the stomach and duodenum, and even cancerous changes may occur, significantly impacting patients' health and quality of life [19], accompanied by a series of sleep problems. Clinically, omeprazole, bismuth agents combined with proton pump inhibitors in quadruple therapy, and compound potassium citrate bismuth capsules are used to treat peptic ulcers. Benzodiazepines are the most widely used sedatives, primarily targeting the central nervous system by blocking excitatory impulses transmitted from the limbic system to the cerebral cortex, leading to sleep. They have both sedative and hypnotic effects. Barbiturate hypnotics are derivatives of barbituric acid and can be classified into long-acting, intermediate-acting, and short-

acting based on their duration of action [20]. For peptic ulcers associated with insomnia, Western medicine treatment is effective and potent, but long-term use can lead to drug resistance, making recurrence likely after discontinuation. For patients with gastric ulcer perforation, surgery is typically required, but different surgical methods can yield varying outcomes [21]. Peptic ulcers have a high incidence rate and are prone to complications such as bleeding, perforation, and obstruction. In severe cases, surgery can quickly alleviate the patient's suffering and improve sleep disorders.

## 5. Non-pharmaceutical treatment

As modern medicine continues to advance, research is being conducted on treatment options for gastric mucosal lesions. Moreover, with the changing mindset of people, there is an increasing emphasis on non-pharmacological treatments, and currently, Western medicine lacks specific curative methods. Traditional medical practices such as acupuncture and moxibustion have been widely applied in the treatment of gastrointestinal diseases. Modern studies have confirmed that acupuncture has significant therapeutic effects on protecting and repairing gastric mucosal damage [22]. Additionally, in addressing sleep disorders, a holistic approach can be taken, analyzing the dysfunction of the five organs, and selecting acupoints based on syndrome differentiation. The focus can be on regulating the spleen and stomach, calming the mind, or soothing the liver and resolving depression. Through holistic differentiation, acupoints such as the head, heart meridian, and spleen meridian are selected to regulate issues within the patient's body [23]. Traditional Chinese acupuncture has a long history and can improve overall functional status by unblocking meridians and adjusting the yin-yang balance of the patient's organs. This is particularly effective for digestive ulcers combined with insomnia. By needling "five organ acupoints" and using fire needle techniques to stimulate sleep-inducing, Shenmen, and Sanyinjiao points, the yin-yang functions of the organs can be regulated, leading to the effects of unblocking meridians, calming the mind, and balancing yin and yang, thereby restoring normal physiological functions and improving insomnia [24,25]. Good sleep helps enhance the body's immune system, effectively resisting the invasion of pathogenic factors and maintaining normal physiological functions.

## 6. Summary and outlook

Research shows that peptic ulcers are closely linked to insomnia, yet many people still do not take this connection seriously. Clinical data and experiments indicate that addressing peptic ulcers and insomnia separately with conventional Western medicine treatments is not very effective; they tend to recur and have poor outcomes. By adopting the holistic perspective of traditional Chinese medicine (TCM) and applying differential diagnosis and treatment, focusing on the relationship between the two conditions, analyzing their etiology and pathogenesis, and considering the functions of the spleen and stomach as the hub of qi movement, the liver's role in promoting free flow, and the heart's function in regulating blood circulation, it is essential to ensure adequate qi and blood to maintain the harmony of the five organs. Emphasizing the coordinated action of these organs, TCM focuses on treating symptoms specifically. At the same time, non-pharmacological treatments are emphasized, aiming to stimulate the body's self-regulation from the perspective of meridian flow. With social development, increasing pressure has led to a rise in cases of peptic ulcers combined with insomnia. Research on the pathophysiology of these conditions remains incomplete, and studies on the relationship between peptic ulcers and insomnia are still in their early stages, lacking more clinical data and experimental validation. However, current scientific literature shows that TCM treatments can be highly effective. Therefore, we need to continuously explore and innovate in using TCM methods to treat peptic ulcers combined with insomnia, thinking about and improving the approach. We believe that by adhering to the holistic perspective of TCM and applying differential diagnosis and treatment, we can provide

more scientific theoretical guidance for treating peptic ulcers combined with insomnia.

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