

# Research Progress of Zengye Chengqi Decoction in Improving Constipation after Cerebral Hemorrhage

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**Abstract:** Cerebral hemorrhage is one of the critical and severe neurological diseases. Constipation is common after operation. It is difficult to see the patient's dry stool, obstruction of the lower part, heat and yin deficiency, which puzzles clinicians. Modern medicine has less means to improve postoperative constipation. Zengye Chengqi Decoction can not only promote gastrointestinal motility, improve intestinal flora imbalance, regulate neuropeptide secretion, but also improve immunity, reduce serum inflammatory factors, reduce intracranial pressure, improve blood viscosity, reduce cerebral edema, protect cardiovascular, antioxidant and protect organs. It has the effect of laxative, nourishing yin and clearing heat on constipation after cerebral hemorrhage. It can really improve the symptoms of heat and yin deficiency such as abdominal distension, dry nose and mouth, high fever and sweating fatigue, reduce the occurrence of complications such as rebleeding, and help postoperative recovery. It provides new ideas for the prevention and treatment of cerebral hemorrhage related diseases by integrated traditional Chinese and Western medicine, and provides new means of diagnosis and treatment for clinicians.

**Keywords:** Cerebral hemorrhage; Zengye Chengqi Decoction; Postoperative constipation; Increase fluid laxative

Intracerebral hemorrhage (ICH) is one of the common critical diseases in neurosurgery. It is a non-traumatic spontaneous brain parenchymal hemorrhage. Its high mortality, high disability rate<sup>[1]</sup> and its huge burden on families and society have to be taken seriously. In the study of brain surgery, the author found that most of the patients with cerebral hemorrhage were in a coma after skull drilling and drainage and craniotomy decompression. They were in bed for a long time and could not take the initiative to eat. The gastrointestinal peristalsis function decreased, and a large amount of bleeding fluid was lost. In addition, the operation would damage the body fluid and consume gas. After the operation, a large amount of sweating, excessive loss and insufficient intake were caused. Therefore, in addition to limb disorders, there were often symptoms such as dry nose and mouth, hot skin, abdominal distension and discomfort, dry stool (difficult to dry stool), and yellow urine. Constipation is mainly caused by internal and external factors leading to imbalance of yin and yang, imbalance of viscera function, poor qi movement and loss of large intestine conduction. Surgery is performed to destroy the balance, so it is difficult to defecate. A report shows that about 55 % of stroke patients have constipation<sup>[2]</sup>. In the clinical observation, the author found that the classical prescription Zengye Chengqi Decoction had obvious curative effect on alleviating the above symptoms, and opened up new ideas for improving constipation after cerebral hemorrhage.

## 1. Zengye Chengqi Decoction

Zengye Chengqi Decoction<sup>[3]</sup>, which was first recorded in 'Wenbing Tiaobian', is one of the representative prescriptions for nourishing yin and moistening dryness. It has the effects of nourishing yin and increasing fluid, venting heat and relaxing bowels. It is widely used in clinical practice. It is suitable for abdominal distension caused by heat and yin deficiency, difficulty in drying feces, obstruction of the lower part, dry mouth and nose, red tongue and yellow fur, fine pulse, and emaciation for a long time. As mentioned in the book 'insufficient body fluid, no water boat stop', cerebral hemorrhage postoperative injury fluid, just as no water is difficult to row, Zengye Chengqi

Decoction to tonic body for the use of laxatives, for this kind of deficiency constipation effect is very good.

### **1.1 Solution of Zengye Chengqi Decoction**

Zengye Chengqi Decoction created by Wu Jutong is composed of Radix Scrophulariae, Radix Ophiopogonis, Radix Rehmanniae ( Zengye Decoction ), Yellow and Glauber 's salt. With Radix Scrophulariae as the monarch, it takes the function of nourishing yin and clearing heat, and can dredge the two stools. Radix Ophiopogonis tonify, dredge, moisten, Radix Rehmanniae tonify without stagnation, Radix Ophiopogonis and Radix Rehmanniae compatibility of nourishing yin and generating fluid, increasing liquid moistening dryness<sup>[4]</sup>;Rhubarb and mirabilite are compatible with nourishing yin and relieving heat, increasing fluid and dredging ; the whole party through, moisten, fill both, moisten and fill under the attack, the party of qi and blood combined treatment, to Xuanmaidi Zixuefen, to Xiaohuang Qingqifen, attack and fill the law for the initial Fushi, Jinkui is not much<sup>[5]</sup>.

### **1.2 Mechanism of Zengye Chengqi Decoction**

Zengye Chengqi Decoction is very common in the clinical treatment of constipation. At present, the mechanism of this prescription is still few. Jiang Hua et al.<sup>[6]</sup> found that Zengye Chengqi Decoction can regulate the disorder of intestinal flora in rats, inhibit the release of inflammatory cells, and promote the secretion of vasoactive intestinal peptide (VIP) by pulmonary and intestinal neuropeptides, reduce the secretion of calcitonin based on related peptide ( CGRP ) and substance P ( SP ) to regulate the imbalance of flora, which is consistent with the theory of ' lung and large intestine being interior-exteriorly related ' in traditional Chinese medicine.Xu Jianghong et al.<sup>[7]</sup> found that Zengye Chengqi Decoction can increase the water content of rabbit stool and accelerate defecation. Change its stool traits, promote gastrointestinal motility, increase motilin levels. This shows that the mechanism of action of Zengye Chengqi Decoction is related to increasing stool water content, accelerating gastrointestinal motility, and improving gastric motility.Wang Zili et al.<sup>[8]</sup> studied the rats with hot colon type qi syndrome, indicating that Zengye Chengqi Decoction can effectively reduce the body temperature of rats, protect intestinal tissue to maintain normal structure, reduce the number of intraepithelial lymphocytes, increase the number of goblet cells, and reduce the release of inflammatory factors in serum to restore intestinal mucosal immune barrier function.

### **1.3 Study on modern pharmacology of composition medicine**

Scrophulariae Radix is the largest dose of the whole prescription, which is rich in iridoids, triterpenoids, polysaccharides, flavonoids, phenylpropanoids and other compounds. It can protect cardiovascular and cerebrovascular, antioxidant, hypoglycemic, anti-inflammatory and so on<sup>[9]</sup>. Through clinical research, Li<sup>[10]</sup> found that the oxidative stress mechanism of Xuanshen Decoction in the treatment of constipation is to increase the expression of superoxide dismutase and glutathione, reduce the expression of malondialdehyde and 8-hydroxydeoxyguanosine, thereby restoring the balance of oxidative stress and improving the constipation of patients.Scrophularia ningpoensis can be used as a free radical scavenger, mainly through phenolic hydroxyl dissociation, free radicals and so on to achieve antioxidant. The main components of Radix Ophiopogonis are polysaccharides, steroidal saponins, and homoisoflavones, which play an important role in anti-oxidation, antibacterial, cardiovascular protection and immune regulation<sup>[11]</sup>.Shi Linlin<sup>[12]</sup> and other studies have shown that Ophiopogon japonicus polysaccharide can increase the type and quantity of probiotics in the intestine of mice to varying degrees, improve the diversity of flora, and accelerate the reproduction of probiotics to maintain the balance of intestinal flora. Rehmannia glutinosa, which is also a ministerial drug, mainly contains iridoids, flavonoids, triterpenes, phenylethyl alcohol and so on.<sup>[13]</sup>It has the functions of protecting cardiovascular and cerebrovascular, regulating immunity, antioxidation and bacteriostasis.Rehmannia glutinosa polysaccharide can promote the scavenging of free radicals and reduce the level of lipid peroxide by increasing the activity of glutathione catalase and superoxide dismutase in serum and reducing the content of malondialdehyde<sup>[14]</sup>.

Rhubarb is an adjuvant, and its main components are gallic acid, rhein, rhubarb polysaccharide, aloe-emodin, etc. It has pharmacological effects such as regulating blood lipids, regulating immunity, anti-oxidative stress, and bacteriostasis<sup>[15]</sup>.Jin Lixia et al.<sup>[16]</sup> pointed out that the mechanism of anthraquinone derivatives in rhubarb is to accelerate intestinal peristalsis, reduce water absorption in the intestine, and promote defecation. The quinone glycoside enters the intestine, inhibits the Na<sup>+</sup> -K<sup>+</sup>

-ATPase process, reduces Na<sup>+</sup> transport absorption, increases intestinal osmotic pressure, increases intestinal water, and accelerates intestinal peristalsis, thereby achieving defecation. Glauber's salt is also an adjuvant, the source of minerals is complex, the composition is obviously different, and there is a lack of research on the mechanism. Hu Peng et al. [17] found that mirabilite can regulate the composition of intestinal flora, increase the relative abundance and diversity of intestinal flora in mice, promote the abundance of Ruminococcus in intestinal flora of mice, and increase the number of probiotics, so as to protect the gastrointestinal mucosa and achieve the effect of moistening the intestine.

The five herbs that make up Zengye Chengqi Decoction not only play a role in the gastrointestinal system-their active ingredients can repair and maintain the balance of intestinal flora, increase probiotics, promote intestinal peristalsis, protect intestinal mucosa, and accelerate defecation. It can also protect the cardiovascular and cerebrovascular system, scavenge free radicals, increase catalase activity, reduce peroxidation, and play an antioxidant role. It can be seen that the feasibility of Zengye Chengqi Decoction for constipation after cerebral hemorrhage is beyond doubt.

## **2. Research progress of Zengye Chengqi Decoction in improving constipation after cerebral hemorrhage**

### **2.1 Postoperative cerebral hemorrhage and constipation**

Constipation in traditional Chinese medicine is known as difficult stool, obstructed stool, spleen and so on. The disease is located in the large intestine, which is closely related to the spleen, stomach, liver, kidney and other organs. The main pathogenesis is the failure of large intestine conduction. Stroke is called stroke in traditional Chinese medicine. The main pathogenesis is phlegm-heat and fu-organ excess, which needs to be purged. Traditional Chinese medicine believes that the main causes of constipation after stroke are yin deficiency and intestinal dryness, and deficiency of both qi and yin. Therefore, the treatment should be replenishing qi and nourishing yin, nourishing yin and moistening dryness, increasing fluid and relaxing bowels, and increasing fluid and promoting bowels.

Constipation is one of the common clinical complications in patients with cerebral hemorrhage. It is caused by long-term bed rest, eating, mood and drugs after operation. The defecation center after cerebral hemorrhage is inhibited, the autonomic nerve function is destroyed, and the gastrointestinal peristalsis function is weakened. And cerebral hemorrhage using dehydration therapy to reduce intracranial pressure will lead to intestinal mucosal dehydration, so that the stool dry. Patients with constipation after cerebral hemorrhage have stool induration, defecation leads to anal pain, bleeding, and abdominal distension, nausea and discomfort, decreased appetite, increased malnutrition, and troubled clinicians. Modern research on the use of Zengye Chengqi Decoction to improve constipation after cerebral hemorrhage provides new ideas for clinical treatment.

### **2.2 Modern research progress**

Studies have shown that [18], constipation after cerebral hemorrhage is caused by neurological dysfunction leading to slow intestinal peristalsis, combined with commonly used dehydration drugs to reduce intracranial pressure, intestinal mucosal water loss. Ding Zhenhuan [19] found that the use of Zengye Chengqi Decoction in the conventional treatment of stroke constipation significantly improved the efficacy and significantly shortened the defecation time. On the basis of ultra-early surgery, Chen Feifan [20] added Zengye Chengqi Decoction to treat hypertensive intracerebral hemorrhage. The Glasgow Coma Scale (GCS) and Activity of Daily Living (ADL) scores were significantly improved, and the neurological deficit score was significantly decreased. It is proposed that the combination of traditional Chinese and Western medicine is effective in hypertensive intracerebral hemorrhage. Xu Changqing et al. [21] found that the National Institutes of Health Stroke Scale (NIHSS) score was significantly reduced on the basis of conventional western medicine treatment of acute stroke, suggesting that neurological impairment was reduced. Li Xingling [22] found that the effective rate of Zengye Chengqi Decoction combined with acupuncture in the treatment of constipation after stroke was as high as 90%, and the clinical symptoms such as dry stool, poor defecation, abdominal distension and abdominal pain, belching and less food were improved. Zhao Zhiqiang et al. [23] through clinical observation found that taking Jiawei Zengye Chengqi Decoction (Yuanshen, Maidong, Xishengdi, Dahuang, Mangxiao) in the treatment of cerebral infarction constipation has a significant effect, so that defecation is smooth and the stool is moistened. Zengye Chengqi Decoction is widely

used in constipation caused by brain diseases, especially after cerebral hemorrhage. It can not only regulate the gastrointestinal tract, restore gastrointestinal function and health status, but also relieve constipation. It plays an important role in postoperative recovery and reducing complications.

Modern clinical studies have shown that Zengye Chengqi Decoction can not only improve intestinal flora imbalance, improve gastrointestinal motility, regulate neuropeptide secretion, but also regulate and improve immunity, reduce serum inflammatory factors, reduce intracranial pressure, improve blood viscosity, reduce brain edema, and protect organs [21]. The advantage of traditional Chinese medicine lies in the overall concept, syndrome differentiation and treatment. Under the use of dehydrating drugs, a large amount of body fluid is lost in patients with cerebral hemorrhage. After surgery, it is easy to appear true yin deficiency, and the excess heat of the viscera is obvious, such as abdominal distension, red face, high fever and other symptoms, which will lead to postoperative bleeding again. According to the specific situation of the patient, the heat potential is obviously added with cortex moutan, gypsum, etc., the phlegm is added with fritillaria, bamboo shavings, etc., convulsions or limb tightness is added with scorpion, earthworm, etc., according to the person, time and place. Combined with conventional western medicine treatment, so as to reduce the symptoms of abdominal distension, high fever and sweating, dry mouth and nose after long-term bed rest.

### 3. Discussion

Constipation after cerebral hemorrhage is common in clinical practice. Constipation patients have difficulty in defecation and difficulty in defecation, which leads to intracranial hypertension, worsens the disease and falls into a vicious circle. Zengye Chengqi Decoction can effectively improve the symptoms of constipation in patients with cerebral hemorrhage after operation, reduce complications and improve the quality of life. At the same time, it is safe to take traditional Chinese medicine, and the side effects are small. Therefore, the treatment of constipation after cerebral hemorrhage with traditional Chinese medicine is worthy of attention and application by clinicians. In addition, the concepts of 'holistic concept', 'syndrome differentiation and treatment' and 'treatment principle' of traditional Chinese medicine exert their advantages, providing new ideas for the treatment and research of neurological diseases by combining traditional Chinese and Western medicine.

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