

# Correlation Between the Brain-Gut Axis Mechanism and Functional Gastrointestinal Diseases from the Perspective of Chinese Medicine

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In recent years, with the increasing pressure of life and work, the number of people suffering from anxiety disorders and depression is increasing. In addition to the manifestations of depressed mood, depressed will, slow thinking and so on, most of them are accompanied by more obvious gastrointestinal symptoms. More and more studies have proved that psycho-psychological factors are one of the primary triggers of the onset of digestive diseases. The proposed mechanism of the brain-gut axis can not only explore the pathogenesis of gastrointestinal illness from the psychological level but also provide new ideas for the treatment related to gastrointestinal disease caused by psychological factors.

## 1 The relationship between the brain-gut axis and gastrointestinal diseases from the perspective of traditional Chinese medicine

As early as 2000 years ago, classical Chinese medicine proposed a similar theory of the brain-intestine axis mechanism, i.e., laying the foundation for the close connection between the nervous system and the gastrointestinal tract through the method of Tibetan elephants and meridians.

### 1.1 Brain-gut axis mechanism from meridian theory

In terms of meridian theory, the "Ling Shu - Meridians"

states, "The stomach channel of foot Yang Ming, starts from the nose...passes by the Shangguan point, trace the hairline to the forehead. Its branches ... goes through the diaphragm, into the stomach, and communicates with the spleen." It is also contained in "The large intestine channel of hand Yang Ming, starts from the second finger of the great finger...intersects upward at the cervical vertebra...goes through the diaphragm, into the large intestine." Through the natural link between the brain and the stomach and intestines through the logical connection of the meridians, and the endless flow of meridians to pass information to each other, in addition to the "Difficult Classic - 47 Difficult" said "the head of the people, the meeting of all the Yang", "Su Wen - inverse adjustment" contained in the "a discontented stomach makes one uneasy to lie" and other views are Can confirm this view.

### 1.2 Brain-gut axis mechanism from visceral images

The brain is the "house of the gods" and the "lord of the internal organs". The brain has the functions of controlling life activities, spiritual consciousness and sensory activities, and therefore it is connected to the internal organs. Li Gao proposed the theory that if the spleen and stomach are deficient, then the nine orifices are not accessible is a precedent for treating brain diseases by generating the spleen and clearing the Yang. The spleen is the acquired origin and the biochemical source of qi and blood. The subtle substances from the spleen and stomach are used to nourish the whole body and the brain. If the spleen and stomach function is healthy, then the water

and valley can be transformed, the qi and blood are abundant, the five organs are peaceful, and the nine apertures are bright, then the qing yang comes out of the upper opening and reaches the brain; if the spleen and stomach function is weak, then the nine holes are not clear, and the brain loses its nourishment. In the broad sense, in addition to the main receptor of the stomach and the main transport of the spleen, the absorption function of the large and small intestine are also included. Therefore, the process needs to be completed by the spleen, stomach and intestines together to achieve the purpose of enrich the essence and benefit the brain.

The heart hides God, and the brain is the house of the gods; the heart is the main blood, feed up to the brain, the blood is full so the brain is plentiful, so the heart-brain interconnected, "medical heart Zhongzheng chenxi records" says: "the heart-brain interconnected, the gods since Zhan Ran long wake up." This said brain is the heart of the gods. Heart and the small intestine through the meridians constitute the table relationship, the heart and blood moistenings help the small intestine of the analytic functions, and the small intestine of the secretion of clear and turbid absorption of water and grain essence of blood to fill the heart pulse. From this, we can see that the heart, brain, stomach and intestine interact with each other to form the network pathway of brain and gut, and the subtle material that is transmitted to the whole body and mind is a material called Cerebro-intestinal peptide that plays a vital role in the brain-intestinal axis.

## **2 Brain-gut interaction and spleen-gastric disease**

### **2.1 From the view of the unity of form and spirit**

The concept of the unity of form and god is an essential feature of the theoretical system of Chinese medicine. In the organism, way and God are interdependent and inseparable; style is the hiding place of God; God is the embodiment of life in shape; the unity of form and God is the guarantee of the existence of life. The essence of the relationship between structure and God is the relationship between body and mind. From the perspective of traditional Chinese medicine, the relationship between body and mind refers to the functions of the organs and the five gods (soul, God, mind, body, spirit), the seven

emotions (joy, anger, worry, thought, grief, fear, fear) of the interrelationship between. Emotions and the various internal organs are linked, and especially the spleen and stomach are the most significant. The Jing Yue Quanshu says: "The injury of the spleen and stomach to the emotions is more than the diet, cold, and heat." Xia Menghuan and others believe that the spleen and stomach are more susceptible to emotional stimulation than other organs as follows: (1) Spleen and stomach are the "origin of the afterlife" and "the source of blood biochemical", so the essence, energy and spirit are nourished by the spleen and stomach, the change of emotion can be directly affected by the ups and downs of spleen and stomach function; (2) Spleen and stomach are the hinge of qi, "Su Wen - Jutonglun Chapter" is contained in "joy is gas slow, anger is gas up, sad is gas vanish, fear is under the gas down, thinking is the gas knot, the shock is gas chaos," and the spleen and stomach qi machine in the middle jiao in this process plays a significant role in balancing other emotional qi. (3) Among the seven emotions, especially anger, worry, thinking is most likely to hurt the spleen; depression can be reversible and violate the spleen, melancholy is easy to damage the middle qi, thinking will cause the heart and spleen are deficient. In summary, the spleen and stomach are easily injured by anger, melancholy and thoughts.

### **2.2 From the TCM Emotional Theory**

The Analects on Cold and Injury: "Yang Ming disease more sweat, fluid out of the stomach, stomach is dry, the stool will be hard, hard is delirium." "Su Wen • Heat theory" says: "Yangming suffered from disease, Yangming dominate muscle, it's vein carry nose, contact with the eyes, so the body hot that can not lie down.." The opposite illustrates that diseases of the stomach and intestines can also lead to abnormalities of the mind. Contemporary medical research has found that the gastrointestinal system is most susceptible to psychological, mental and other internal and external factors stimulated by all body systems, and the incidence of physical and mental diseases of the gastrointestinal system is also significantly higher than the rate of physical and mental disorders of other systems and conditions. This and Chinese medicine emotions most vulnerable to the spleen and stomach ideas coincide. The above can be seen from the meridian pathway can be seen in the brain and intestines, there is a stable physiological

connection between the two, while the visceral elephant theory through the spleen and stomach and intestines to jointly nourish the physiological functions of the brain and pipes, to further elaborate the brain and organs close relationship. The meridians and viscera illustrate the connection between mind and intestine at the physiological level, while the integrated view of form and spirit mainly through the influence of emotions on gastrointestinal diseases, from psychological factors and stress response to discuss the relationship between brain and intestine. The above is the same as the influence of the brain-gut axis of modern medicine on the gastrointestinal system through the neuroendocrine network, which indicates that Chinese medicine has studied the brain-gut axis system for a long time, and on this basis, ancient physicians established appropriate formulas to regulate physical and mental diseases related to this axis.

### **3 Perspectives and summary**

More and more multifunctional gastrointestinal

symptoms in patients with digestive diseases are positively correlated with anxiety and depression, which proves that there is an excellent correlation between psychological factors and gastrointestinal disorders. Mental-emotional abnormalities are one of the primary triggers of digestive diseases and interact with gastrointestinal diseases in the process of bidirectional regulation of the brain-gut axis, so the concept of the brain-gut axis puts forward a new pathological research direction of gastrointestinal illnesses. At present, Western medicine does not have any particular cure for functional digestive diseases, but mainly gives corresponding drugs to relieve symptoms. But by combining Chinese medicine emotional pathogenesis and psychological factors to influence gastrointestinal function through the brain-gut axis, it provides essential guidance for the research of new drugs that can not only improve patients' mental and psychological state but also regulate gastrointestinal disorders by combining Chinese and Western medicine.