

# Improves Peritoneal Dialysis Gastrointestinal Dysfunction based on Good Offices in China

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## Abstract

The pathogenesis of peritoneal dialysis gastrointestinal dysfunction is spleen and kidney failure, and dampness, turbidity and stagnation of blood within the body. Dr. Liu Chunying, the chief physician, believes that the loss of transportation in the middle state is the characteristic of the pathogenesis of such patients, and the basic concept of treating such patients is to harmonize the middle state. Dr. Liu explains the pathogenic characteristics of this disease from five aspects and proposes the principle of mediating the middle state based on the pathogenic characteristics, and proposes the five methods of strengthening the spleen and benefiting the qi, cultivating the yuan and consolidating the essence, raising the clear and lowering the turbidity, pacifying the liver and draining the diarrhea, and invigorating the blood to disperse the knots. In this paper, we will explain the characteristics of the disease mechanism, the treatment method, the dialectical formula, the clinical use of drugs, and the addition and subtraction of drugs from these five aspects, with a test case for reference.

## Keywords

Good Offices in Central China; Later Heaven to Nourish the First Heaven; Peritoneal Dialysis; Gastrointestinal Dysfunction.

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## 1. Introduction

Peritoneal dialysis (PD) is one of the treatment modalities for end-state renal diseases (ESRD) [1], and has become the first choice for patients because of the advantages of less hemodynamic impact, protection of residual kidney function, no risk of bleeding and cross-infection, home dialysis, and low treatment cost. Studies have confirmed that patients with PD can develop complications such as gastrointestinal dysfunction, peritonitis, peritoneal fibrosis, and protein-energy malnutrition [2]. According to statistics, gastrointestinal dysfunction occurs in 61.6%-79% of PD patients [3]. Most PD patients clinically present with poor appetite, nausea, vomiting, abdominal distension, abdominal pain, constipation, diarrhea, etc. Patients suffer from gastrointestinal dysfunction due to massive protein loss, toxin accumulation in the body, intestinal microbial disorders, delayed gastric emptying, and high intra-abdominal pressure, which impede nutrient absorption [4, 5], further affecting the effectiveness of abdominal dialysis, thus leading to ultrafiltration failure and increasing the occurrence of peritonitis. Therefore, the search for a treatment to address the combined gastrointestinal dysfunction in PD patients has become a major challenge for many experts in the field of nephrology. Western medicine mostly treats patients symptomatically with oral compound- $\alpha$ -keto acid, proton pump inhibitors, and gastroprokinetic drugs, which alleviate patients' symptoms but have poor long-term benefits and fail to improve the effectiveness and prolong the duration of abdominal dialysis. In contrast, TCM emphasizes a holistic view of the five viscera and the principles of prevention before illness and prevention of changes in existing illnesses, and its treatment focuses on early intervention and simultaneous treatment of the spleen and kidney. Therefore, it can often

achieve better efficacy in treating PD patients with combined gastrointestinal dysfunction, while facilitating the recovery of the patient's positive energy [6].

## **2. Good Offices Zhongzhou and Gastrointestinal Dysfunction in PD**

### **2.1 The Origin of the Theory of Good Offices in the State in the Qing Dynasty**

Huang Yuan-young's "Four Sages Heart Source" discusses, "Between the clear and the turbid, it is called the middle qi, the middle qi, the hub of the rise and fall of yin and yang, the so-called earth also", "Four Sages Heart Source" mentions, "The spleen rises, the liver also rises, so water and wood are not depressed; the stomach descends, the heart and lungs also descend, gold and water are not stagnant ..... Ping people down warm and up clear, to the middle qi good transportation ..... Middle qi person and that is the water and fire machine, lift the axis of gold and wood." Because the spleen and stomach live in the middle state, have the function of transforming and producing all things, is the source of qi and blood biochemistry, the five organs and six bowels depend on the spleen and stomach to fill and nourish, is also the pivot of qi elevation, the spleen is the main transport and transformation, perform the function of ascending, the stomach is the main decay and storage, perform the power of descending, reflects the spleen and stomach in the middle state as the pivot of yin and yang qi and blood elevation, Huang Yuan Yu [7] believes that the function of elevation of the organs depends on the middle qi, if the middle qi rotates around the body, the disease goes away and life is prolonged, therefore advocates Therefore, he advocated "the treatment of middle qi". The term "mediation" means to mediate, and to mediate Zhongzhou means that the spleen and stomach mediate the rise and fall of Yin, Yang, Qi and blood to bring peace to the five organs. If the Zhongyu is out of order, the Spleen does not ascend, the Stomach does not descend, the water and grains are not transported, the Liver and Kidney yin and essence do not move up, the Heart and Lung yang cannot reach down, and the five organs are also damaged, and the Kidney, Liver, Heart and Lung can also affect the function of the Zhongyu ascending and descending. Therefore, the mediation of the middle state is vital to the qi and blood yin and yang, qi and blood yin and yang, the five organs are safe.

### **2.2 PD Gastrointestinal Dysfunction in the State of Loss of Transport for the Root of the Disease.**

PD intestinal dysfunction is formed under chronic renal failure, which is categorized as "Guange" and "retention of urine" in Chinese medicine, and the disease is mostly based on spleen and kidney failure, and dampness and stagnation of toxins are the symptoms. Dr. Chunying Liu believes that the cause of PD intestinal dysfunction has the following five aspects: (1) PD patients in the peritoneal cavity for a long time in a high sugar, hypertonic, low PH environment, resulting in a decrease in peritoneal defense, loss of protein, amino acids and trace elements in the dialysis process, so that the patient's vital energy is constantly damaged, the body is in a state of long-term malnutrition, spleen qi decay, loss of transportation, qi and blood can not be transformed, the patient (2) long-term maintenance PD patients, the residual kidney function gradually decreases, the kidney Yang is insufficient to warm the spleen Yang, patients have vague abdominal pain, like warmth and pressure, thin stools or pills and grain does not change, long diarrhea, swollen face and limbs, fat tongue with tooth mark moss, kidney Yang is exhausted and not solid, no way to steam water, patients have little or no urine; (3) PD patients with spleen and kidney deficiency for a long time, gradually produce dampness (3) PD patients have deficiency of spleen and kidney for a long time, and gradually develop dampness, stasis, turbidity and toxicity, while the real evil traps the qi, blocking the elevation, lack of postnatal sources, loss of nourishment, loss of transportation in the central state, turbidity does not descend, resulting in nausea, vomiting, spleen deficiency, dysregulation of the elevation of qi, dampness and turbidity in the obstruction of gastrointestinal dysfunction, resulting in abdominal distension, diarrhea, constipation; (4) the condition is lingering, the patient's state is deteriorating, family, social, economic and a series of factors, resulting in anxiety and depression, long-term emotional quality (5) PD malnutrition patients with prolonged disease, deficiency of vital energy,

damage to the internal organs, resulting in Qi deficiency and stasis, stasis of blood, water-dampness, Qi stagnation, blood stasis and the formation of real evil in each other to form "zhengzheng", which is similar to This is very different from the modern medical view of peritoneal fibrosis, and such patients have obvious blood stasis in the veins and ligaments under the tongue.

Based on the theoretical basis of the Good Offices Zhonghua method, Liu proposed the treatment method of tonifying the spleen and benefiting the qi, cultivating the yuan and consolidating the essence, raising the clear and lowering the turbidity, and paying attention to pacifying the liver and draining the diarrhea, activating the blood and removing blood stasis during treatment. This method is similar to the method of strengthening the spleen, harmonizing the middle and lowering turbidity proposed by Professor Yang Hongtao [8] for the treatment of digestive complications of peritoneal dialysis; the formula of regulating the spleen and draining turbidity proposed by Professor Huang Chunlin [9] for the treatment of gastrointestinal dysfunction in patients on peritoneal dialysis has also been proven to be The treatment of gastrointestinal dysfunction in peritoneal dialysis patients proposed by Prof. Huang Chunlin [9] has also been proved to have significant clinical effects.

### **3. Specific Applications based on the Theory of Mediated Zhou**

#### **3.1 Strengthen the Spleen, Benefit the Qi, and Tonify the Middle State**

PD patients are mainly suffering from "spleen and kidney failure", and the treatise on spleen and stomach. Spleen and Stomach Sheng and Decay" recorded: "All diseases are born from the spleen and stomach." The spleen is the foundation of the postnatal, the spleen is incompetent to moisten the innate, the spleen is incompetent to transport and transform, the water and grain essence cannot be transported to the whole body, there is no source of qi and blood biochemical, the limbs cannot get the qi of grains, then the tendons and flesh are weak. In clinical practice, most of these patients are in a state of hypoproteinemia and anemia, and most of them show signs of weakness of the spleen and stomach, such as fatigue, weakness, dullness, diarrhea, abdominal pain, pale tongue, white or watery coating, tooth-scarred tongue, and weak or moistened pulse. Liu believes that the failure of the spleen and stomach is the root cause of the disturbance of the stagnant middle qi, resulting in the above clinical symptoms, so the main treatment method is to strengthen the spleen and benefit the qi, and to replenish and transport the middle state. The spleen and stomach are the essence of the posterior, and the hub of qi elevation. When the intestinal absorption is adequate, the spleen qi is full and the dampness can be transformed; it can further improve the patient's low protein status and enhance the function of the whole body. Therefore, PD patients with complications of gastrointestinal dysfunction and malnutrition can restore their damaged intestinal functions by nourishing the posterior nature to feed the innate nature.

If the patient has poor appetite and diarrhea, he should add or subtract Ginseng and Atractylodis Macrocephalae, or add or subtract Rizhong Wan if he feels that his abdomen is cold and his stool is not melting, such as deficiency of spleen and Yang. The selection of drugs more to astragalus, ginseng, atractylodes, poria, sand, etc.. Astragalus tonic for the five viscera Qi deficiency, clinical Liu Shi demanded the amount of macro power, the dosage of more than 35-60g; ginseng to the spleen and lung meridian, with the spleen and benefit the qi, nourishing blood and fluids, if the patient's spleen is very weak, the tongue is light, thin white moss, the dosage of more than 20g; if the long deficiency of gas can be used to red ginseng; patients vomit and vomit clear water and sputum, the stomach Zhen water sound, is the spleen and stomach weakness, water and dampness stop gathering, gas rebellion on the cause, at this time, can be added with Fu Ling. Atractylodes macrocephala, coix seeds, take its spleen to dispel dampness, if water dampness is difficult to go with cinnamon branch, dry ginger, most patients have poor appetite, can choose malt, chicken neijin stomach, promote gastric secretion, increase intestinal peristalsis. Modern pharmacological studies have found that Astragalus can lower urinary protein, stimulate hematopoietic stem cells, delay renal failure and many other effects [10], methanolic extract in Radix et Rhizoma Ginseng can improve inflammatory response and enhance anti-inflammatory activity [11], Radix et Rhizoma Ginseng promotes gastrointestinal peristalsis,

regulates intestinal flora and improves gastrointestinal function [12, 13], polysaccharide component in Radix et Rhizoma Ginseng can delay hematopoietic stem cell aging [14], Atractylodes Macrocephalae can induce apoptosis and inhibit cell proliferation [15], has anti-inflammatory and immune regulating and bi-directional regulation of the gastrointestinal tract [16], and Poria has anti-inflammatory, immune enhancing and antiemetic functions of the spleen [17].

### **3.2 Cultivate the Yuan Energy to Strengthen the Root in Order to Stabilize the Middle State**

Yuan Qi is hidden in the kidney and is the essence of the innate nature. The essence and qi in the kidney can interact with each other, and the kidney is the essence of the innate nature. Qing . Zhang Xugu said: "The spleen and stomach are able to transform and produce by the inspiration of the yuan yang in the kidney, and the yuan yang is precious to the solid and dense, so it is able to solid and dense by the spleen and stomach to biochemistry of yin essence to contain and nurture the ear"; if the kidney deficiency for a long time, the kidney yang is insufficient to warm the spleen and earth, the patient may manifest as prolonged diarrhea more than, pill grain does not transform, dizziness and dizziness, the tongue is light, the moss is white and smooth, the pulse is sunken The spleen and kidney yang deficiency symptoms are especially obvious in the ulnar pulse, so we should take the method of cultivating the yuan and consolidating the essence, so that the kidney qi can be restored and Zhongzhou will be safe. Liu Shi clinical can be used to warm the kidney Yang, patients with prolonged diarrhea, pills and valleys do not change more to warm the spleen and kidneys, the use of drugs more to Baji Tian, golden hair dog spine, cuscuta mild products to supplement the kidney Yang, if stubbornly can not improve the person, can be appropriate to add the use of saponilla, cinnamon, dry ginger. In Chinese medicine, it is believed that the kidney collects essence and produces marrow, which is consistent with the theory of bone marrow hematopoietic stem cells proposed by Western medicine. patients with PD gastrointestinal disorders are mostly accompanied by renal anemia, so according to the theory of "kidney produces marrow and marrow produces blood", the medicine can be supplemented with angelica, wolfberry, dulcimer and other kidney tonics to stimulate the production of hematopoietic cells and regulate the immune status. The kidney essence will be sufficient, the essence will produce marrow, and the marrow will turn into blood, and the anemia will be improved.

### **3.3 Raise the Clear and Lower the Turbid, Harmonize the Middle State.**

PD patients rely on exogenous discharge of turbid yin, clear yang does not rise, turbid yin does not fall, dampness, blood stasis, evil toxins and other pathological products interact in the body, the intestinal flora is imbalanced, the intestinal mucosa is constantly damaged to aggravate the patient's condition, Chinese medicine has "five damaged organs only take According to the principle of balance of yin and yang of the five organs, there are ascending and descending, the five organs will be safe, and the method of mediating Zhongzhou is used to ascend and descend the turbidity and regulate the balance of the body. In clinical practice, we can use the method of tonifying Zhong Yi Qi Tang to elevate the clear yang, and use the combination of rhubarb and ascending marijuana, rhubarb can ventilate the internal organs and drain turbidity, rhubarb contains rhubarbin which can reduce the release of inflammatory factors and inhibit peritoneal fibrosis, and can reduce intestinal mucosal cell apoptosis to protect the intestinal mucosal barrier and make dialysis more adequate [18], patients with severe constipation mostly use raw rhubarb 15-20g to achieve the purpose of soft stool 1-2 times a day to ventilate the internal organs and drain turbidity, using rhubarb alone If the patient's constipation is severe, he should use raw rhubarb 15-20g to achieve the purpose of softening the bowels and draining turbidity once or twice a day, and rhubarb alone can be added with cistanches, fire hemp, Citrus aurantium, and mannitin; if the patient has long-standing disease, he is more deficient and it is difficult to lower the turbidity toxicity, he should use wine rhubarb 25-25g. "toxic evil". Long-term peritoneal dialysis patients, due to the accumulation of toxins, the mouth is often self-conscious odor, do not want to eat, so the choice of Fu Ling to detoxify and remove dampness, to reduce the body creatinine, urea nitrogen content. Modern research [20] found that Fu Ling has the effect of protecting the kidneys and delaying the progression of kidney disease. Evil turbidity upwards

offend the stomach, turbid yin does not descend, nausea, vomiting, etc. According to the condition add ginger, half summer, perilla stems, descend the rebellion and stop vomiting.

### **3.4 Pacifying the Liver and Draining the Diarrhea, and Regulating the Middle State Together**

Liver is the root of lift, the main organ of qi lift, liver qi lift in an orderly manner, the spleen and stomach healthy, qi and blood have a source, the zhongzhou can run, so when the spleen and stomach is out of order, when to dredge the liver, that is, wood can dredge the earth. Anxiety and depression are the most common psychological problems in patients with end-stage disease. Patients suffer from liver, spleen and kidney deficiency, as well as phlegm, fire, depression and stasis, and such patients suffer from pain in the hypochondrium and ribs, abdominal distension, depression or irritability, liver qi stagnation, liver and stomach disharmony, belching and acid reflux, dullness, Liu Shi repayment formula advocates the importance of opening up phlegm and removing fire and annoyance when reconciling the middle state, and in clinical practice, most of the patients take Prosperity San plus reduction, with Calamus The formula is based on the following principles If the patient is tired, depressed, and white, you can add ginseng, astragalus and dihuang soup, and so on, to help cultivate the earth and nourish water, and help Zhongzhou to regulate the qi. During the treatment of patients with PD gastrointestinal dysfunction, Liu always emphasizes the importance of emotional therapy.

### **3.5 Invigorate Blood and Disperse Nodules, and Pass Down the Middle State**

It is recorded in the Treatise on Blood Evidence that "when blood stasis goes, new blood is born"; Qi is the marshal of blood and blood is the mother of Qi; prolonged stasis will not give rise to new blood; such patients with prolonged disease have stagnant blood stasis blocking the veins and ligaments, and the veins and ligaments under the tongue are obvious. Professor Yang Hongtao [21], in explaining the reasons for repeated ultrafiltration in patients on peritoneal dialysis, pointed out that patients on peritoneal dialysis have a deficiency in their kidney ligaments, which is compounded by the internal obstruction of turbid toxins for a long time, so their stasis of blood is more serious than that of patients with general kidney disease. Therefore, based on the specificity of this pathological mechanism, Liu proposed a major method to invigorate blood circulation and disperse blood stasis, and to pass down the central state, so as to restore the function of the spleen and stomach by eliminating blood stasis and creating new ones, and to further achieve the purpose of helping to eliminate evil. The method of helping to dispel stasis is consistent with modern medicine's use of anticoagulation and anti-platelet aggregation, which is not simply limited to activating blood stasis, but focuses more on using peach kernel and safflower to dissolve stasis and create new ones. In addition, drugs such as Salvia miltiorrhiza and Radix et al. still have certain immunosuppressive, anticoagulant, and renal blood flow enhancing effects [22], as well as preventing interstitial fibrosis and protecting the renal tubules and kidneys from further damage [23, 24]. For those who have been ill for a long time, their blood stasis is difficult to drive away, so Ye Tianshi proposed that "insects and ants are searched in the cavity one by one to attack and pass the evil knots", and Liu Shi used to add whole scorpion, ground dragon and other insects to multiply the effect of activating blood and opening the ligaments.

## **4. Conclusion**

The clinical symptoms of PD gastrointestinal dysfunction patients are complex and common, the disease involves the five internal organs and six internal organs, and is closely related to pathological factors such as blood stasis, phlegm and dampness. According to the theory of mediating Zhongzhou, to restore the normal function of qi, blood, yin and yang of the body, to strengthen the spleen and benefit qi, to tonify the kidney and cultivate the yuan, to elevate the clear and lower the turbidity, and to remove the liver and depression, to remove blood stasis and to open the ligaments through evidence-based treatment, to combine the deficiency of the patient's specimen, to select and use the prescription, to give full play to the advantages of Chinese medicine in the treatment of such patients, and to achieve the clinical practice of "The clinical practice is to "observe the pulse and evidence, know the offense, and treat with the evidence". In the process of drug administration, Dr. Liu advocates the use of formula granules to reduce water intake and reduce the risk of high potassium in

patients. By improving the intestinal function of such patients, it can ensure the maintenance of ultrafiltration, protect the residual kidney function, delay the time of ultrafiltration failure, and improve the quality of life of patients with PD. The author summarized the methods of treating PD patients with combined gastrointestinal dysfunction by Liu Shi and summarized the common clinical medication rules in order to provide a new theoretical basis and treatment ideas for treating gastrointestinal dysfunction in PD. However, the intervention mechanism of TCM for PD gastrointestinal dysfunction and the multi-target therapy of TCM still need to be further explored.

## 5. Case example

The patient, Zhu Moumou, male, 68 years old, was admitted to our department in October 2019 due to fatigue and weakness for more than 1 month. His symptoms include fatigue, weakness, chest tightness, shortness of breath, swelling of the face and limbs, chills in the extremities, little food and dullness, light mouth and no thirst, easy to catch a cold, and unformed stools. The tongue is pale, with yellow coating, and the pulse is sunken and weak. Laboratory tests: glycosylated hemoglobin 6.2%, fasting glucose 6.8-7.1 mmol/l, renal function: creatinine 640 umol/l, uric acid 395 umol/l, hemoglobin 80 g/l, prealbumin 160 mg/l, albumin 30.1 g/l, potassium 2.7 mmol/l; diagnosis: chronic kidney disease (uremic phase) peritoneal dialysis Status Renal anemia. TCM diagnosis: renal failure disease (spleen-kidney yang deficiency. Internal stagnation of dampness) Treatment: tonifying the spleen and benefiting the kidney, resolving dampness and removing turbidity. Herbs: Radix Codonopsis pilosulae 20g, Rhizoma Atractylodis Macrocephalae 10g, Radix Astragali 40g, Radix Bupleurum 10g, Poria 15g, Radix et Rhizoma Saxifraga 6g, Job's Tears 10g, Pericarpium Citri Reticulatae 10g, Radix Pleurotus Macrocephalae 10g, Nutmeg 10g, Radix Ginger 6g, Salviae Miltiorrhizae 10g; Chinese herbal formula 100ml water, 14 doses.

Second diagnosis: After two weeks, the patient's shortness of breath was reduced, swelling of both lower limbs and face was reduced, diet was improved, stool was normal, weakness was still seen, occasional nausea, tongue was light, moss was thin and yellow, pulse was sunken. The patient's symptoms have improved, and the treatment principle remains the same. The treatment principle should be the same. We should tonify the spleen, warm the kidney, lower the turbidity and dispel dampness, and adjust the medication as follows: remove dry ginger, bone marrow, nutmeg, Dan Shen, and Lycopodium, and add 10g of Da Huang, 10g of Panax notoginseng, 10g of ginger, 10g of red peony, 10g of Chuanxiong, 15g of Xian Ling Spleen, 15g of Bacopa monniera; the herbal formula is taken with 100ml of water, a total of 21 payments continue to take.

Third diagnosis: three weeks later, the patient's swelling of both lower limbs disappeared, weakness, nausea, poor appetite, light thirst have improved, occasionally see chest tightness, shortness of breath, stools are sometimes dry and sometimes thin, the tongue is light, thin yellow coating, pulse sunken. The kidney function showed: creatinine 630umol/l, uric acid: 340umol/l; hemoglobin: 90g/l, prealbumin: 190mg/l, albumin: 37.1g/l, potassium: 3.52mmol/l. Treatment continued with the above formula plus or minus barley, Radix Codonopsis pilosulae 10g with Radix Codonopsis pilosulae 10g, Muxiang 10g, herbal formula 100ml of water, a total of 21 payments Continue to take.

## 6. Press Release

The patient has been on peritoneal dialysis regularly for more than 3 years, and is suffering from deficiency of the spleen and kidney over time, with internal stagnation of dampness. The tongue is light, with thin yellow coating, and the pulse is sunken and weak. The symptoms belong to deficiency of the spleen and kidney, with internal stagnation of dampness and turbidity. The deficiency of Yang Qi, the essence of the material down the drainage, the combination of deficiency and reality, deficiency is not to promote and lead to the spleen deficiency can not move its fluid for the stomach, the limbs can not grain of gas to fill and weak, spleen and kidney deficiency, Yang Qi is also insufficient, the spleen limbs lose warmth, so see the hands and feet cold, spleen Yang deficiency, deficiency of cold in the middle Jiao, the lower Jiao is not solid, the development of diarrhea, turbidity

up the stomach, stomach Qi does not descend nausea, should be warming the spleen and kidney, replenish Qi, remove stasis and turbidity method of treatment. Radix et Rhizoma Ginseng, Radix Astragali, Poria Cocos, Coix Coix seeds replenish spleen qi, dispel dampness and lower urine protein, Sharen, Lycopodium negativum, improve appetite, bone marrow and nutmeg replenish yang and stop diarrhea. Because the second diagnosis of the patient occasionally nausea, normal stool, to the bone marrow, nutmeg added with ginger and half asia, dry ginger and stomach to stop vomiting, red peony, Chuanxiong activating blood stasis, rhubarb through the internal organs to drain turbidity and reduce urea. For this reason, patients who have been ill for a long time and suffer from qi depression should use Chai Hu and Mu Xiang to move qi and clear the liver. As the patient is susceptible to Yang deficiency, the general formula is supplemented with Yu Ping Feng San to prevent the patient from aggravating his condition with cold.

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