



RESEARCH ARTICLE

ADVANCES IN TCM PREVENTION AND TREATMENT OF CHRONIC RENAL FAILURE

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ABSTRACT

Chronic renal failure is a common and frequently-occurring disease in clinic. At present, dialysis and kidney replacement are the main means to treat chronic renal failure, which is an effective treatment for maintaining the life of patients. However, the side effects and high mortality rate after treatment seriously endanger the health of patients with chronic renal failure. Therefore, it has become an important issue for researchers to find a method that can delay the occurrence and development of chronic renal failure and reduce the side effects of dialysis treatment, so as to improve the quality of life of patients. Chinese medicine has a long history and plays an important role in the prevention and treatment of chronic renal failure. It is of great practical significance to give full play to the advantages of traditional Chinese medicine in the treatment of chronic renal failure on the basis of combining Western medicine. This paper will collect, collate, analyze and summarize the research on the prevention and treatment of chronic renal failure in TCM in recent years, in order to provide reference for medical workers and researchers in the prevention and treatment of chronic renal failure.

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INTRODUCTION

Chronic renal failure (CRF) is a common clinical syndrome, which is developed from various kidney diseases and seriously endangers human health. It belongs to the end stage of kidney and is irreversible damage (Chen H.Z., 2005). At present, the clinical diagnosis of chronic renal failure is mainly based on the "Guidelines for Clinical Practice of Chronic Kidney Disease and Dialysis" compiled by the K/DOQI Working Group of the American Kidney Foundation (NKF) (Coronado Daza Jorge, *et al.*, 2019). This guideline not only puts forward the concept of Chronic Kidney Disease (CKD), but also unifies the staging of CKD. According to statistics, as of December 31, 2012, 244,121 patients with maintenance hemodialysis and 37,942 patients with maintenance peritoneal dialysis in China will continue to grow at a rate of 20-30% annually (Liu D.W., 2015). With the change of medical environment, living environment and lifestyle, the proportion of secondary renal failure caused by diabetes, hypertension and drugs is gradually increasing (Koye D. N., *et al.*, 2018; Chang Y.L., 2006). Therefore, how to delay the occurrence of chronic renal failure and alleviate or eliminate the side effects of Western medicine treatment during dialysis has become an urgent problem for

medical workers. In China, besides western medicine, there are also traditional Chinese medicine (TCM) in the prevention and treatment of chronic renal failure. Its effect has been recognized by many scholars, and the prevention and treatment of chronic renal failure by TCM has been studied more mature. Therefore, the author reviews the research progress of chronic renal function in TCM in recent years, in order to provide reference for the prevention and treatment of chronic renal failure for medical workers.

**Name of Disease In Traditional Chinese Medicine**

Traditional Chinese medicine classifies chronic renal failure as "edema", "Longbi", "backache", "asthenia", "chronic renal failure", "Guange" and other categories, but from the symptoms of CRF. Yan P., *et al.* (2018) believe that "Guange" is closer to the clinical manifestations of CRF, but can not cover all symptoms; Professor Lv R.h., (Han L.P., *et al.*, 2017) also proposed to define CRF. Named "Slow Guange", it is considered to be a comprehensive syndrome group caused by chronic kidney disease and various chronic diseases, which damages the kidney, leading to kidney fatigue, kidney dysfunction, water, dampness, turbidity and toxin stopping, involving five kidneys and consuming Qi and blood. In order to

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diagnose the disease name and highlight the nature of the pathogenesis of the whole disease and the current state of development of the disease, and better reflect the law of development of the disease, "Chronic Renal Failure" is used as the TCM name of CRF in the Terminology of Clinical Diagnosis and Treatment of TCM(Zhu W.F., et al.,1997).

### **Etiology and Pathogenesis**

Due to feeling exogenous pathogens, inappropriate diet, excessive fatigue, drug poisoning kidney, Labor injury and chronic illness, these will lead to kidney failure, dampness and turbidity. Deficiency of spleen and kidney is the root, dampness and turbidity are the manifestation, spleen deficiency has no right to transport and transform, kidney deficiency is the opening and closing of the loss of division, the long-term Yang injury caused by Qi, Yin injury caused by Yang, and finally lead to the decline of kidney qi, can not separate clear and excrete turbid, turbidity and toxin stagnation, stagnation of blood stasis. Professor Hong Q.G.(Wang L.L., et al.,2018) thinks that the asthenia in origin of spleen and kidney failure often coexists with the enrichment in symptom of dampness, turbidity and blood stasis, which is the common pathological state of chronic renal failure, presenting as the deficiency of the positive and the evil, the miscellaneous cold and heat, deficient and excessive syndromes appearing together; in combination with the patient's constitution and the preference of cold and heat, there are differences in the preference of spleen and kidney qi deficiency, spleen and kidney yang deficiency or metaplasia of dampness and heat. LvR.H.(Han L.P., et al.,2017) thinks that CRF is a synthetical syndrome caused by chronic kidney disease and many kinds of chronic diseases, which damages the kidney, leading to kidney fatigue, kidney dysfunction, water, dampness, turbidity and toxin stopping, involving five kidneys and consuming Qi and blood. Zhao S.Q.(Qiu M.Y., et al.,2007) believes that the basic pathogenesis of chronic renal failure is that damp-heat evil goes deep into Yingxue, collaterals and veins are blocked, with the passing of time poison will accumulates. Zheng P.D.,(2008) believed that "fire does not produce soil", "life door fire fails", and Spleen Yang cannot be warmed and transported, then body fluid can not be transported, accumulate water and humidity, flow all over the limbs, resulting in phlegm turbidity; therefore, water and wet phlegm turbidity formed after renal insufficiency, which in turn can lead to aggravation of kidney deficiency syndrome and further deterioration of the disease. Liang L.(2009) believes that the disease is due to various causes leading to unfavorable opening and closing of the kidney, turbidity can not be released, retained in the body, accumulated due to blood stasis. Cheng C.F.(2009) believed that the pathogenesis of chronic renal failure should focus on the disorder of ascending and descending of qi. He pointed out that although the disease of Guange was seen in the upper and lower levels, the pathological changes were closely related to the disadvantage of the three-coke gas engine, therefore, his treatment was based on the use of air regulators to ascend and descend, and the use of prescriptions to increase and decrease the ascending and descending dispersion. Although different physicians have different opinions on the etiology and pathogenesis of CRF, clinical treatment based on different opinions can achieve

better therapeutic effect, so the opinions of different physicians have important reference value in clinical practice.

### **Dialectical Treatment**

Dialectical treatment is the basic principle of understanding and treating diseases in TCM, and it is also a special research and treatment method of diseases in TCM. The common TCM syndromes of CRF are spleen and kidney deficiency, Qi and Yin deficiency, liver and kidney yin deficiency, Yin and Yang deficiency, dampness and turbidity, water and gas overflow, blood stasis and collateral obstruction. At present, every doctor of TCM syndromes of CRF has his own unique understanding, which provides many new ideas for future generations to use TCM to prevent and treat CRF. TCM can be divided into adjuvant treatment during dialysis and non-dialysis in the prevention and treatment of CRF, which has unique advantages in delaying the progress and deterioration of CRF.

### **Assistant Therapy During Dialysis**

#### **Internal Therapy**

The treatment of CRF during dialysis is mainly based on substitution therapy. In order to alleviate the side effects of treatment, improve the quality of life of patients and prolong the survival time of patients, Chinese medicine has been applied to clinic and achieved good results

Study shows(Che Y.N., et al.,2019) in CKD stage 5 dialysis patients, the quality of life (QOL) of patients treated with TCM was better than that of patients not treated with TCM, manifested in symptoms/problems, effects of kidney disease, cognitive function, sexual function, sleep, physiological function, physical pain, general health status, mental health, emotional job, social function and so on numerous items show that traditional Chinese medicine treatment can have a positive impact on QOL of dialysis patients.

Shen Z.R.,(2010) Studied the distribution rules of TCM symptoms of CRF, and concluded that the frequency of spleen-kidney Qi deficiency in patients with hemodialysis is the highest, and that of damp-heat syndrome in patients with peritoneal dialysis is the highest, and that of damp-turbid syndrome in patients with peritoneal dialysis is the highest. It has important guiding significance for clinical dialectical drug use. Zhang P.,(2015) treated uremic hemodialysis patients with Chinese medicine detoxification therapy, the results showed that the total clinical effective rate of the observation group was higher than that of the control group; after treatment, the improvement of urea nitrogen and serum creatinine in the observation group was better than that of the control group ( $P < 0.05$ ). Guo N., et al.(2015) Contrasted the treatment of hemodialysis by stages and dialectics of traditional Chinese medicine with that of Western medicine, the results showed that the symptoms, signs, elevated human albumin and hemoglobin in the study group were significantly better than those in the control group. Feng B., et al.(2018) 60 patients were selected to observe the treatment of CRF with WenshenXiezhuo Decoction combined with dialysis, the results showed that WenshenXiezhuo Decoction combined with dialysis could improve clinical symptoms, reduce inflammation and improve renal function in patients with chronic renal failure. Zhu R., et al.(2013) through clinical practice, he observes that Chinese

medicine has good clinical efficacy in protecting residual renal function, improving hemodialysis complications (such as hypotension, hypertension, hyperviscosity), improving nutritional status of hemodialysis patients (such as renal anemia, hypoproteinemia, improving immune function). Chinese medicine has more and more advantages in treating complications caused by dialysis, such as: Zhao J.S.,(1998) treating hemodialysis complications, when hemodialysis, due to excessive bleeding or ultrafiltration dehydration, causing limb numbness, nausea, vomiting, dizziness, headache, skin itching, the main treatment is to strengthen the spleen and kidney, and Yin and Body fluid deficiency, urgent intravenous drip of Shengmai injection to increase blood pressure; Shenqi Dihuang Decoction to invigorate the spleen and kidney, the prescription to treat CRF maintenance hemodialysis anemia to the most appropriate, the prescription Rehmanniaglutinosa Chinese Foxglove, *Cornus officinalis* Sieb. et Zucc., *Morinda officinalis* How., *Psoralea corylifolia* Linn. are used together to balance the Yin and Yang of kidney; CRF maintenance hemodialysis when nausea, vomiting, abdominal distension and other spleen and stomach symptoms occur, Huanglian Wendan Decoction addition and subtraction in order to invigorate qi and warm yang, clearing the viscera and removing turbidity, and reduce stomach adverse reactions, the above-mentioned symptoms of digestive tract and dizziness and headache have been significantly improved after medication, which is not only conducive to the smooth progress of the next hemodialysis, but also can significantly reduce serum creatinine and urea nitrogen; in the diet, rice, meat or fish are boiled before decoction, in order to remove phosphorus, and then eat it, at the same time can take Shenling Baizhu Powder, 6g each time, 2-3 times a day or every other day, the results show that after taking medicine and diet according to this method, patients have good appetite, physical strength, and quality of life has been significantly improved. At present, there are many studies on the treatment of CRF with Chinese patent medicines. Li Y.K.,(2016) observed that Shenkang injection combined with hemodialysis was used to treat chronic renal failure, the results showed that the levels of Scr and BUN in both groups were significantly lower than those before treatment, and the levels of Scr and BUN in hemodialysis + drug group were significantly lower than those in hemodialysis group. The levels of GB and TP were higher than those before treatment, and the levels of ALB, HGB and TP in hemodialysis + drug group were significantly higher than those in hemodialysis group ( $P < 0.05$ ). Zhao J.(2014) intervened the patients with chronic renal failure and malnutrition with Chinese medicine diet, the results showed that AC, TP, ALB and BMI in the observation group were higher than those in the control group, and the observation indexes of renal function were significantly lower than those in the control group, the difference has statistical significance ( $P < 0.05$ ).

#### External Therapy

External therapy for CRF is the advantage and characteristic of traditional Chinese medicine. It has high acceptance of patients, good compliance and remarkable clinical effect. Wang C.F., et al.,(2012) Observed the curative effect of traditional Chinese medicine medicine bath on CRF, the results show that on the basis of routine treatment, adding traditional

Chinese medicine bath, BUN and Scr in the traditional Chinese medicine bath group decreased more than those in the control group ( $P < 0.01$ ), and significantly improved the symptoms of hypertension, edema, itching, nausea and vomiting, and significantly increased Hb and Alb. Wang W.L.,(2013) observed the curative effect of Chinese medicine umbilical application on CRF, 82 CRF patients were randomly divided into control group and treatment group, the control group was treated with routine western medicine, the treatment group was treated with Chinese medicine umbilical application on the basis of the control group, the results show that the total effective rate of the treatment group was 92.0% higher than that of the control group 62.5%, the difference was statistically significant ( $P < 0.05$ ). Ear point embedding therapy can play a significant role in the treatment of complications of chronic renal failure: Cheng S.W., et al.,(2012) used ear point embedding method to treat CRF patients with insomnia, the control group was mainly treated with routine treatment and nursing, the experimental group was treated with ear point embedding method on the basis of the control group; after two courses of treatment, the sleep quality of the experimental group was improved, the number was significantly higher than that of the control group ( $P < 0.05$ ). Gao Y., et al.,(2017) used ear acupoint seed burying instead of ear acupuncture to stimulate ear acupoints to dredge channels, harmonize viscera and balance yin and yang, the results showed that combined stimulation of Shenmen, liver, heart and kidney acupoints in both ears could improve the sleep quality of dialysis patients. Acupuncture therapy was used to treat muscle spasm and convulsions in hemodialysis patients, and good results were achieved (Hu J.P., et al., 2017). Research shows (Cai H.M., et al, 2017; Yan P., et al., 2017) that moxibustion therapy could improve the function of arteriovenous fistula in hemodialysis patients, improve the peritoneal transport function and improve the nutritional status of hemodialysis patients.

#### Prevention And Treatment During Non-dialysis Period

##### Internal Therapy

The results show that the treatment of chronic kidney disease stage 5 (non-dialysis) with Chinese medicine can significantly reduce BUN, SCr, increase GFR, improve clinical symptoms of CKD5 patients, delay the progress of chronic renal failure, improve the quality of life of CKD5 patients, and no obvious adverse reactions were found (Chen J.B., 2015). Su G.B.(2011) made a follow-up study on 194 patients with CKD3, 4 and 5 stages, and compared the effects of traditional Chinese medicine (TCM) and Western medicine on the occurrence of end-points of CKD3, 4 and 5 stages, the results showed that compared with conventional western medicine (control group), TCM combined therapy (observation group) could prolong the end-points of CKD4 patients (death, progression), relatively prolonged end-point events (death, dialysis, kidney transplantation, double serum creatinine) in patients with CKD4. Qian C.(2018) Selected 60 patients to observe the curative effect of comprehensive treatment of spleen and kidney qi deficiency syndrome in early and middle stage of chronic renal failure by traditional Chinese medicine; the results showed that after treatment, the levels of SCr and BUN decreased significantly in both groups, and the levels of eGFR, ALB and Hb increased significantly; after treatment, the levels of SCr and BUN decreased and the levels of eGFR, ALB and Hb increased in the

treatment group, degree is more significant than the control group; there is a significant difference in the distribution of TCM syndromes and clinical efficacy between the two groups ( $P < 0.05$ ). Jin H. (2011) made a prospective study on the therapeutic effect of TCM diagnosis and treatment program for chronic renal failure (non-dialysis period); the results showed that this program can effectively alleviate the clinical symptoms of CRF, protect the renal function of patients, delay the rapid progress of renal failure, improve the nutritional status of patients and metabolic conditions of blood lipid, blood coagulation, calcium and phosphorus, and reduce some of the concurrence of CRF; the occurrence and development of symptoms can improve the quality of life of patients, including physical health, mental health and kidney disease related areas, it is safe to use and has no serious side effects, it is worthy of further clinical application.

### External Therapy

Shang L.L., et al. (2012) selected 61 clinical patients and used BaoshenGuanchang (Polygonaceae *Rheum palmatum* L., *Alisma plantago-aquatica* Linn., *Amomum tsoko* Crevoet et Lemarie, *Acorus tatarinowii* 50g per drug, enema with Decoction) to treat chronic renal failure; the results showed that BaoshenGuanchang had the effect of clearing viscera and removing blood stasis, clearing turbidity and toxicity, delaying the progress of disease and improving renal function. Drug bath fumigation is one of the assistant methods in treating CRF in traditional Chinese medicine; it can not only relieve sweat and swelling, remove turbidity and wind, improve the symptoms of edema and itching in CRF patients, but also reduce the contents of serum creatinine and urea nitrogen, improve renal function and promote the elimination of toxins in vivo; it is an effective treatment for delaying the course of CRF and controlling the progress of CRF (Zhang H., 2012; Li X.C., et al., 2016; Zhao W.J., et al., 2011). "Lingshu. Guanneng" said: "Needles do not do, moxibustion is appropriate." Moxibustion has the functions of Warming Yang and dispelling cold, dredging meridians, regulating viscera, Qi and blood, strengthening the body and eliminating pathogens. Cui M.L. (2013) used warm needling and moxibustion combined with basic treatment for chronic renal failure of spleen and kidney qi deficiency in early and middle stages; the results showed that both groups could improve the renal function, clinical symptoms and signs of patients, and the treatment group was superior to the control group in improving renal function (urea nitrogen, serum creatinine), clinical symptoms and signs. External therapy of CRF in traditional Chinese medicine is not only simple, low cost, good curative effect, but also can avoid the side effects brought by western medicine, it is an effective means worthy of in-depth study and application in the prevention and treatment of CRF. Ye Z. (2013) treated CRF with external application of traditional Chinese medicine preparation at Shuangshen and Shenque points; the results showed that the effect of Acupoint Application of traditional Chinese medicine combined with general symptomatic treatment was better than that of only symptomatic treatment but not acupoint application in the early and middle stages of chronic renal failure.

## DISCUSS

From the point of literature collection, there are more and more studies on the prevention and treatment of CRF in traditional Chinese medicine. Guangdong Provincial Hospital of Traditional Chinese Medicine Nephropathy Key Speciality, as the leading unit of the National Excellent Chinese Medicine Nephropathy Key Speciality and the National Administration of Traditional Chinese Medicine's "Eleventh Five-Year Plan" Key Disease Chronic Renal Failure TCM Diagnosis and Treatment Program Research, leads 30 key specialties of nephropathy in the whole country, combs and summarizes the current diagnosis and treatment programs being implemented by various centers, and forms a new and optimized TCM diagnosis and treatment scheme for chronic renal failure (non-dialysis period) with TCM characteristics and advantages (Jin H., 2011). This is of great significance to the prevention and treatment of CRF by traditional Chinese medicine. However, there are still some unreasonable aspects in the literature research, such as the unreasonable experimental design and the failure to follow the statistical research methods. Therefore, the author believes that future research should be improved in the following aspects: ① because of the different stages of CRF, the design of research program should be based on the current diagnostic criteria, the selection period of cases should be the same, so as to ensure the same contrast between the two groups; ② expanding the sample size, the principles of medical statistics should be followed in experimental design; ③ we should strengthen the research of TCM in the prevention and treatment of CRF, define specific medicinal targets, and provide effective treatment plan for the prevention and treatment of CRF; TCM external therapy is a major feature of the prevention and treatment of CRF, which is simple to operate and easy to accept by patients, to provide the best treatment for CRF, we should fully explore the multi-way administration of traditional Chinese medicine.

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