

Regulation of intestinal flora by external treatment of Traditional Chinese medicine

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Abstract: External treatment of Traditional Chinese medicine, as one of the commonly used treatments in traditional Chinese medicine, plays an important role in adjuvant therapy. Intestinal flora is involved in many pathophysiological processes in the body and is an important link of body health. The imbalance of intestinal flora can cause multi-system diseases, and the external treatment of TRADITIONAL Chinese medicine, as a relatively safe and effective treatment, has become a new breakthrough in disease prevention and treatment. In this paper, the regulation effect of external treatment of TRADITIONAL Chinese medicine on intestinal microflora was reviewed to provide more reference for the intervention of intestinal microflora imbalance by external treatment of traditional Chinese medicine.

1. Introduction

There are nearly 100 trillion microbes in the human gut, which is 10 times the total number of human cells^[1]. The harmonious coexistence of host and intestinal flora can maintain the mucosal barrier, regulate the immune system and substance metabolism, and protect the intestinal tract from pathogenic bacteria and toxins. The diversity of intestinal flora is dynamic and influenced by diet, environmental factors, exogenous probiotics and drugs^[2]. The imbalance of bacterial homeostasis can cause multi-system diseases, such as digestive system, endocrine system and cardiovascular system diseases^[3]. Therefore, maintaining intestinal microecological balance is another important measure to prevent and treat diseases.

External treatment of TRADITIONAL Chinese medicine includes acupuncture, acupoint application, Chinese medicine enema, acupoint embedding, etc. As another effective method to treat diseases in addition to oral medicine, it plays an important role in the auxiliary treatment of diseases, and is frequently used in clinic with good results. External treatment of TRADITIONAL Chinese medicine can regulate intestinal flora through multiple channels and multiple targets and effectively improve clinical symptoms. At present, there are few studies on the intervention of TCM external treatment on intestinal microflora at home and abroad, with a small scope and shallow degree. Therefore, this paper only analyzes and summarizes the regulation of TCM external treatment on intestinal microflora, providing more references for the clinical application of TCM external treatment on intestinal microflora.

2. Basic concepts of intestinal flora

Gut microbes (GM) is a complex and diverse intestinal microecosystem, in which Bacteroidetes and firmicutes account for more than 90%, while actinobacteria, proteobacteria and verucomicrophyla have a relatively low abundance^[4]. After birth, the human body gradually forms an individual intestinal bacteria structure, which is in dynamic balance and changes under the influence of lifestyle, diet, age and drug use. The composition of normal intestinal flora was also significantly different. There is mutual restriction and co-existence between bacteria and host.

The clinical research on the treatment of diseases by external treatment of TRADITIONAL Chinese medicine from the perspective of intestinal flora mainly focuses on regulating the balance of intestinal flora, increasing beneficial bacteria, reducing harmful bacteria and increasing the diversity of intestinal flora, which happens to be consistent with the theory of "nourishing healthy and dispelling evil, Yin and Yang and keeping secret" of Traditional Chinese medicine^[5]. Starting from the similarities between enterobacteria theory and TCM basic theory, it is of great significance to actively explore the regulation of intestinal flora by TCM external treatment to treat diseases.

3. Intervention of intestinal flora by external treatment of Traditional Chinese medicine

3.1 acupuncture

Acupuncture and moxibustion can dredge the channels and qi, connect the viscera and stimulate the body to adjust the balance of Yin and Yang. It has the characteristics of two-way regulation, and is a simple, low risk and effective treatment. In recent years, acupuncture and moxibustion to regulate intestinal flora and treat diseases has become a research hotspot. Sun Simiao proposes in qianjin Fang that moxibustion at gastric acupoint can enhance the function of spleen and stomach, improve the immune defense ability of body and reduce diseases by "if you want to be safe, three miles often do not do it". Li Dongyuan put forward the guiding ideology that "deficiency of the stomach prevents qi from operating in the five zang-fu organs, twelve meridians, fifteen collaterals and four limbs, while all diseases arise" and "the weakening of sanyuan true qi is caused by deficiency of the spleen and stomach before qi does not rise", pointing out that the spleen and stomach are pathological changes of diseases. "Lingshu · Prickly Section on True Evil" said: "The key to using a needle is to regulate qi. The most significant function of acupuncture and moxibustion is to regulate qi, which can replenish the five zang organs and nourish the stomach. Acupuncture can regulate the proportion of beneficial bacteria and pathogenic bacteria and inhibit the expression of inflammatory factors so as to normalize the ecological structure of intestinal flora. Some scholars^[6] believe that the maintenance of intestinal flora homeostasis is an important factor for the normal functioning of the "spleen and stomach" physiological function in TRADITIONAL Chinese medicine. Intestinal bacteria participate in the body's nutritional metabolism and immune function, which is the biological basis of the physiological function of the spleen and stomach. Wei, D^[7] waiting by the UC mice induced by electric acupuncture and moxibustion treatment of DSS, and high-throughput genome sequencing to detect the intestinal flora found by acupuncture and moxibustion treatment, can improve the intestinal flora of alpha and beta diversity, diversity index, the treatment inhibited the streptococcus, bacteroides, etc., and has promoted the lactic acid bacteria in the level. Chen Lu^[8] et al. treated PATIENTS with IBS-D by "Tiaoshen Jianpi" acupuncture, and compared the symptom scores before and after treatment, they found that "TiaoShen Jianpi" acupuncture could improve the symptoms of abdominal pain and diarrhea in PATIENTS with IBS-D. After analyzing the structural abundance and diversity of intestinal flora by 16S rRNA sequencing technology, it was found that the Shannon index increased and the Simpson index decreased, and firmicutes increased while Bacteroides and Proteobacteria decreased. By comparing the control group and the model group, Chen Bin^[9] et al. found that the

clinical manifestations of RHEUMAToid arthritis were significantly correlated with the changes of intestinal flora in the induced joint inflammation rats treated with moxibustion. The ratio of bacilli/cocci and gram-positive bacilli/bacteria increased, suggesting that moxibustion may intervene in the treatment of rheumatoid arthritis by regulating the disorder of intestinal flora.

At present, there are few studies on the change of intestinal flora level by acupuncture and moxibustion, and there are few diseases, and most of the intestinal bacteria that are interfered with are common beneficial bacteria and pathogenic bacteria. In addition, the influence mechanism of acupuncture intervention on intestinal flora to treat diseases is not clear, which is mainly attributed to the "brain-gut axis theory". Acupuncture has a regulatory effect on brain-gut peptides, thus affecting intestinal flora and gastrointestinal motility.

3.2 Point application

Acupoint application refers to the method of making Chinese medicine into medicine powder, making paste preparations with ginger juice and vinegar, and sticking it on specific acupoints to treat diseases. Acupoint application is based on the holistic view of Traditional Chinese medicine and meridian theory as the theoretical basis to guide clinical syndrome differentiation and acupoint application. In Lingshu meridian Article, it is recorded that "the tendons of foot Yangming.....If the chin tendon is cold, it will lead the chin sun to move to the mouth; if it is hot, the chin tendon will slow down, and it will be withdrawn and withdrawn. Treat it with horse paste, paste its urgent, with white wine and cinnamon, and smear its slow.....", pointing out that the human body communicates with the inside and outside through the meridians, and applies traditional Chinese medicine to specific acupoints to communicate with the outside and inside, correcting the ups and downs of Yin and Yang in the viscera. Compared with traditional administration, acupoint application avoided liver head guan effect and gastrointestinal inactivation, and reduced adverse drug reactions. In addition, the stimulation of acupoint application can regulate the body's humoral and immune functions, thus improving tissue function^[10]. Xiang Shijian^[11] used 16S rRNA to measure the intestinal bacteria abundance of guinea pigs in 15 cases of asthma model group, acupoint administration group, non-acupoint administration group, dexamethasone sodium phosphate group and blank group. After analysis, it was found that the diversity of guinea pigs' intestinal bacteria increased after acupoint application, with the increase of Prevotella, the decrease of Bacteroidetes and the increase of proteobacteria. The number of firmicutes in asthma model group was lower than that in blank group and each administration group. Si Yuancheng^[12] et al. applied a transdermal patch to shenque point in nutritionally obese mice and found that point application could control the synthesis of FAS in nutritionally obese mice, thus regulating lipid metabolism, significantly affecting cyanobacteria and fibrobacteria, and improving the intestinal microflora structure of obese mice.

Acupoint application method can be directly absorbed through skin tissue infiltration of drugs, but also through specific acupoint stimulation to play a curative effect, with dual therapeutic effect. However, the number of previous clinical studies is small, there is no unified standard, and there is a lack of safety evaluation of acupoint application. Moreover, the therapeutic mechanism of acupoint application is still unclear.

3.3 Traditional Chinese medicine enema

Traditional Chinese medicine enema means that the decocted Chinese medicine liquid is poured into the rectum through an enema and retained for about 30 minutes. It is permeated and absorbed by local intestinal mucosa to bring into effect. It is recorded in Treatise on Febrile diseases that "a piece of pig bile, diarrhea juice, and a little French vinegar were taken as the earliest records of traditional Chinese medicine enema. With the development of traditional Chinese medicine, the application of

traditional Chinese medicine enema has gradually expanded. Modern studies^[13] have proved that Traditional Chinese medicine can not only inhibit bacteria and improve immunity, but also regulate intestinal flora, improve intestinal mucosal barrier function and relieve inflammation. Yu Jiao^[14] wait 86 ulcerative colitis patients were randomly divided into observation group and control group, control group given oral beauty salad, observation group in the control group, combined with traditional Chinese medicine (TCM) on the basis of observation, observe the treatment results of two groups, observation group of normal flora and I comparison was significantly higher degrees of disorders, illustrate that the traditional Chinese medicine enema can improve the intestinal flora imbalance.

Chinese medicine enema can directly act on intestinal flora and play a local regulatory role. In addition, it can also absorb drugs through intestinal mucosa and play a systemic role. Traditional Chinese medicine enema is based on syndrome differentiation and holistic view of traditional Chinese medicine, giving play to individual treatment and focusing on both internal and external treatment. At present, the system diseases associated with intestinal flora imbalance many have used traditional Chinese medicine enema method, such as ulcerative colitis, chronic pelvic inflammatory disease, etc., and has achieved good, we have reason to speculate about application of traditional Chinese medicine enema treatments for these systems may be disease by intervening in the structure of intestinal flora, but the number of research method of traditional Chinese medicine enema intervention in intestinal flora is less, Therefore, it is urgent to carry out further experimental research on the relationship between Chinese herbal enema and intestinal flora.

3.4 Acupoint embedding

Acupoint embedding refers to the absorbable line placed in the human body specific acupoints, the absorbable line is gradually liquefied and absorbed, relative to acupuncture and moxibustion has prolonged the effect of the human meridians and acupoints, during the absorption can continue to stimulate the acupoints, so as to prevent and cure diseases^[15]. In "Lingshu · Zhongshi Chapter", it is recorded that "for those who have been ill for a long time, the evil spirit will go deep, and those who have pierced the disease will go deep inside and stay for a long time", which reflects the advantage of lasting effect of burying the wire method. Wang qun^[16], 87 patients were divided into the control group and the combined group, control group adopts foot three mile acupuncture point bury line therapy, the joint group when I retention enema and foot three mile acupuncture point bury line therapy, the pumping air ventilation cultivation of intestinal flora, the results show two groups of patients detected amount of lactobacillus, bifidobacterium and enterococcus was have the obvious change, and compared with the control group after treatment, The combined group had higher numbers of Lactobacillus, bifidobacteria and enterococcus, and lower numbers of E. coli.

About the modern medical mechanism of catgut embedding therapy at acupoints, some scholars^[17] believe that: ① restore nerve function and regulate nerve reflex; ② Enhance human immunity, improve local circulation; ③ Inhibit the release of inflammatory factors and reduce cell apoptosis; ④ Regulate cytokines and improve body metabolism. Acupoint catgut embedding has certain advantages in the adjuvant treatment of some chronic diseases, but due to its complex mechanism of action is still unclear, experimental research and clinical trials should be further promoted.

3.5 Massage

Massage massage refers to the use of doctors push, take, lift, pinch, knead, according to the treatment of the patient's body surface acupoints or meridians. In the "plain ask different method appropriate theory" recorded: "the central, its flat to wet, heaven and earth so all things are also many, the people eat miscellaneous and not labor, so its disease more impotence fever, its treatment should

guide according to the stilt, so guide according to the stilt, also from the central massage as a treatment means of ancient. Massage is a comfortable and safe treatment to avoid the pain of acupuncture. Abdominal massage can directly act on the outside of gastrointestinal, effectively promote gastrointestinal movement, improve gastrointestinal function. Xiong Ying^[18] etc will be randomly divided into control group and 67 children with allergies to knead ridge group and the control group given probiotic preparations and allergic disease prevention and control of dietary and lifestyle guide, knead ridge group on the basis of the control method of infantile tuina intervention to knead ridge, 8 weeks after treatment in the two groups of children allergic constitution score were decreased significantly, and the more significant the knead ridge group than the control group. In terms of the level of intestinal flora, the ratio of bacillus/Rococci and gram-positive bacillus/Rococci in the two groups were significantly increased, and the increase in the chiropractic group was more significant than that in the control group.

4. Summary

External treatment of Traditional Chinese medicine with its simple, inexpensive, safe, effective characteristics, by the majority of patients recognized and favored. At present, the study of intestinal microflora by external treatment of TRADITIONAL Chinese medicine mainly focuses on gastrointestinal diseases and metabolic diseases, such as ulcerative colitis and obesity. The changes of intestinal flora were mainly caused by the increase of beneficial bacteria and the decrease of harmful bacteria or opportunistic bacteria. Homeostasis can be maintained only when the number of beneficial bacteria is restored and the number of harmful bacteria is reduced.

Diseases and the imbalance of intestinal flora are mutual cause and effect. As an intervention method, external treatment of TRADITIONAL Chinese medicine can improve the diversity of intestinal flora and increase beneficial bacteria, so as to regulate body functions and achieve the role of disease prevention and treatment. However, the influence of external treatment and syndrome differentiation on bacterial community was different. At present, there is no systematic and standardized clinical research program for the external treatment of intestinal microbiota imbalance diseases, and there is no unified efficacy evaluation standard, and there are few cases studied. In the future, in deepening the research on TCM external treatment of intestinal imbalance diseases, we should combine the physiological and pathological characteristics of intestinal imbalance, integrate the advantages of different therapies, and draw lessons from modern medical technology to promote the application of TCM external treatment in clinical treatment.

Acknowledgements

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