

## Research Progress of Traditional Chinese Medicine in The Treatment of Type 2 Diabetes with Insomnia

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### Abstract

**Patients with type 2 diabetes generally have different degrees of insomnia, which seriously affects the quality of life of patients and even makes patients depressed. At present, there is a certain dependence and recurrence in the treatment of western medicine, while the treatment of traditional Chinese medicine has obvious advantages. It has a place in the treatment process, not only the internal treatment of traditional Chinese medicine, but also a variety of characteristic treatments, which greatly improves the insomnia of patients and reduces the pain of patients. Therefore, through the collation and analysis of the literature in recent years, this paper will elaborate on the etiology and pathogenesis, internal treatment, external treatment, and combined therapy, in order to provide some ideas for future clinical work.**

### Keywords

**Type 2 Diabetes Insomnia; Etiology And Pathogenesis; Traditional Chinese Medicine Treatment.**

### 1. Introduction

Diabetic insomnia belongs to the category of 'diabetes' and 'insomnia' in traditional Chinese medicine[1]. Diabetes is a kind of developmental disease with chronic abnormal glucose metabolism[2], mainly in the majority of patients with type 2 diabetes. It is mainly manifested as high blood glucose level for a long time. If patients do not pay attention to it or fail to find it in time, once the disease occurs, there is no doubt that patients will suffer from disease problems for a long time, which will eventually lead to lesions in various tissues and organs of the body, increase the mental pressure of patients, and induce different degrees of sleep disorders[3]. Insomnia(sleep disorder) is one of the most common complications of type 2 diabetes mellitus, accompanied by clinical symptoms such as difficulty in falling asleep, insufficient sleep time and reduced sleep quality. If patients are in this insomnia state for a long time, they are not paid attention to, not found in time or not treated in a timely and effective manner. A series of mental problems such as depression and neurasthenia may occur to a certain extent. The two interact with each other to form a vicious circle. The control of glucose and lipid metabolism levels is continuously affected, and the quality of life of patients is continuously reduced[4, 5]. In recent years, studies at home and abroad have shown that there is a close relationship between diabetes and insomnia[6].

At present, the research on the pathogenesis of insomnia in type 2 diabetes in western medicine is not clear. In clinical treatment, sedative and hypnotic drugs such as alprazolam are given on the basis of individualized hypoglycemic drug regimen. Although for insomnia patients, it has the characteristics of rapid onset, it also has many adverse reactions[7], which virtually

aggravates the economic burden of patients. Traditional Chinese medicine treatment has the advantages of definite curative effect, small side effects, and no addiction[8].

## 2. Etiology and pathogenesis of traditional Chinese medicine

Diabetes belongs to the category of diabetes in traditional Chinese medicine. Ancient physicians have their own rich understanding and opinions on the etiology and pathogenesis of diabetes and insomnia. Its basic pathogenesis is yin deficiency and dryness-heat, which is deficiency in origin and excess in superficiality, corresponding to yin deficiency in origin and dryness-heat in superficiality. Diabetes and insomnia are closely related to the etiology and pathogenesis. Some scholars have proposed that the main reasons for insomnia caused by diabetes are as follows: improper diet, more thinking, spleen and stomach damage, lack of biochemical source, resulting in loss of mind; the disorder of spleen transportation and transformation leads to phlegm dampness, phlegm dampness stagnation for a long time into heat disturbance and mind; liver depression for a long time of fire, fire burns yin fluid; the course of the disease is long, the kidney yin is damaged, the kidney water can not help the heart fire, and the water fire is out of hand, which can not restrict the heart fire; heart fire disturbs the mind, and the mind is out of nourishment and causes insomnia.

## 3. Progress of traditional Chinese medicine treatment

### 3.1. Effect of different prescriptions in the treatment of diabetes insomnia

Ancient physicians have their own unique insights and treatment experience on diabetes insomnia. Shi Bai et al.[9] used Yiqi Yangyin Anshen Decoction to treat patients with diabetes and insomnia of qi and yin deficiency type, 35 cases in the control group and 35 cases in the experimental group. The results showed that the prescription could not only significantly improve the insomnia symptoms of patients, but also effectively achieve the positive effects of reducing blood sugar and improving the clinical symptoms of diabetes. Hao Yuying[10] and others used Wumei Pill to observe 60 patients with imbalance of yin and yang in upper heat and lower cold. The results showed that the total effective rate of the observer was as high as 93.10 %. The treatment effect was significant, and it also had a certain effect on reducing blood sugar. Ding Kangyu et al.[11] applied Anshen Decoction to treat 58 cases of diabetes mellitus with insomnia of qi and yin deficiency type. The results showed that it not only had significant therapeutic effect, but also had high safety, and had obvious effect on reducing fasting blood glucose, glycosylated hemoglobin and 2-hour postprandial blood glucose. Chen Li[12] treated 82 patients with obese diabetes and insomnia with Huanglian Wendan Decoction. The results showed that the total effective rate of the observation group was 92.68 %. Zhao Yijing et al.[13] conducted an observation and control experiment on 58 patients with heart-kidney disharmony type diabetes and insomnia. The results showed that the total effective rate of treatment was 89.66 %, which not only reduced blood glucose, but also improved the serum 5-HT level of patients. Peng Yanxia et al.[14] used Huanglian Ejiao Decoction to treat 60 patients with diabetes and insomnia of yin deficiency and fire hyperactivity type. The results showed that the total effective rate of treatment was 90 %, which could significantly improve the quality of life of patients. Li Lan[15] used Suanzaoren Decoction to treat patients with yin deficiency and internal heat type, 35 cases in the control group and 35 cases in the observation group. The results showed that the effective rate was as high as 94.29 %. The conclusion is that the party can improve the sleep quality, blood glucose level and quality of life of patients. Li Jianhui[16] Application of Qingre Huoxue Huatan Decoction(Dahuang 9 g, Huanglian, Huangqin respectively 10 g, Fuling 12 g, Gegen, QuanWhole Trichosanthes and Salvia miltiorrhiza were 15 g respectively.) In the treatment of 100 patients with diabetes and insomnia, 50 cases in the control group and 50 cases in the observation group were divided into the control group

and the observation group by random double-blind method. The results showed that it had obvious therapeutic effect. Hu Jianming[17] applied Danzhi Xiaoyao Powder to 88 patients with liver depression transforming into fire type. The observation group was treated with Danzhi Xiaoyao Powder on the basis of estazolam tablets in the control group. The results showed that the total effective rate of the observation group was as high as 93.18 %. Compared with conventional western medicine treatment, the treatment effect of this prescription was more accurate. Liu Wanwen et al.[18] used Chaihu plus Longgu Muli decoction to treat the disease. Compared with the control group, the curative effect of the observation group was more significant. A large number of clinical practice data have shown that the use of traditional Chinese medicine prescriptions to treat diabetes with insomnia has a significant effect. In clinical application, syndrome differentiation and treatment should be carried out to avoid blind treatment in order to achieve the best therapeutic effect.

## **3.2. External treatment of traditional Chinese medicine**

### **3.2.1. Acupuncture treatment**

Acupuncture treatment of traditional Chinese medicine treatment-Acupuncture and moxibustion, as a kind of health therapy, can directly act on the meridians and acupoints, play a positive role in the overall adjustment of viscera, soothing qi movement, and unblocking qi and blood. It has a good relieving effect on the patients with diabetes and insomnia who have obvious difficulty in falling asleep, the overall shortening of sleep time and the situation that they are prone to awake at night. Moreover, it is considered to have excellent characteristics such as general safety, obvious and rapid effect, and few adverse reactions. The effect of treatment according to the course of treatment is remarkable. Nie Yingjie et al.[19] applied Zhu Lian 's inhibition of type II acupuncture to treat 40 patients with diabetes and insomnia in the control group and the observation group, respectively. The effective rate of the treatment group was 89.19 %. Clinical practice has proved that it can improve the sleep quality of patients. Luo Juan et al.[20] applied the method of embedding needles at shu points(main points: Xinshu, Pishu, Shenshu, Ganshu, Weishu). The observation group was based on the basic treatment of the control group combined with the total number of 40 cases of shu point embedding treatment. The results showed that the total effective rate of the observation group was 87.5 %, indicating that the method could significantly improve the patient 's sleep disorders and improve glucose metabolism disorders. Zhao et al.[21] divided 60 patients into observation group and control group, 30 cases in each group. The control group selected 5 conventional acupoints(Baihui, Sishencong, Yintang, left and right Neiguan, left and right Shenmen). On this basis, the observation group added acupoints with the effect of tonifying qi and nourishing yin(left and right Taiyi, left and right Shuidao, Guanyuan, left and right Zusanli, left and right Sanyinjiao). The total effective rate of treatment was 86.67 %, indicating that the treatment effect was clear. Acupuncture therapy has been widely used in clinical practice, in the course of treatment, have achieved very good results, but if we can continue to sum up experience in the course of treatment, combined with other oral Chinese medicine decoction treatment, will achieve more prominent results.

### **3.2.2. Tcm plaster therapy**

Traditional Chinese medicine application is one of the more common external treatment methods of traditional Chinese medicine. Its principle of action is to apply a variety of traditional Chinese medicines to make medicine cakes and apply them to specific acupoints according to the clinical symptoms of patients, so that the efficacy can directly act on the meridians dominated by acupoints. Compared with conventional oral medication, traditional Chinese medicine application has the advantages of simple operation and high safety[22]. Wang Shanna[23] 45 cases in the control group were treated with basic hypoglycemic drugs, and 45 cases in the observation group were treated with traditional Chinese medicine sticking therapy

on the basis of the control group. The curative effect was observed for a certain period of time. The final results showed that the total effective rate of the observation group was 91.11 %. It can be seen that on the basis of conventional hypoglycemic drugs, the clinical efficacy of traditional Chinese medicine sticking therapy is more significant. Luo Qunfang et al.[24] 86 cases of diabetes with insomnia were randomly divided into control group and observation group with 43 cases in each group. The control group was given oral alprazolam for sedative treatment, and the observation group was given some specific acupoint application on the basis of oral drugs. The results showed that the total effective rate of the observation group was significantly higher than that of the control group, and the effect of improving glucose and lipid metabolism was obvious. The application of traditional Chinese medicine combined with oral medication can significantly improve the symptoms of insomnia, improve the effective rate of clinical treatment, and significantly reduce the pain of patients, which is worthy of widespread clinical use.

### 3.2.3. Combined treatment of auricular point pressing beans

There are a large number of records about auricular points in many ancient medical books and books. 'Lingshu · Kouwen' says: 'The ear is gathered by the pulse, the five internal organs and the twelve meridians are connected to the ear'. The ear is the place where the meridians and organs of the human body converge. The circulation of the twelve meridians is directly or indirectly up to the ear. Therefore, the ear is a bridge to communicate the organs and meridians. It can be closely related to various parts of the body, which provides a certain physiological basis for the diagnosis of auricular points and the treatment of diseases through auricular points[25,26]. When a person's body is diseased, there will be a certain reaction point in the relevant acupoint area corresponding to the viscera on the auricle. Therefore, we can stimulate these response points by applying certain pressure to achieve the effect of treating diseases.

Auricular point pressing bean therapy is a method of using some pills or drug seeds to paste on the surface of auricular points and apply certain stimulation to the relevant acupoint response points to achieve the purpose of treating diseases. Clinical practice studies have shown that this method can achieve the following purposes: reconciling qi and blood, dredging tendons and activating collaterals, and adjusting yin and yang of zang-fu organs[27]. Zhang Yanli et al.[28] treated 39 patients in the control group with conventional hypoglycemic drugs and eszopiclone, and 40 patients in the observation group were treated with hypoglycemic drugs plus drug pillow combined with auricular point pressing beans. The results showed that the use of drug pillow combined with auricular point pressing beans could not only improve the sleep quality of patients, reduce patient distress, but also play a role in protecting islet B cells. Wang et al.[29] randomly divided 98 patients into control group and observation group with 49 cases in each group. The control group was treated with routine clinical intervention, while the observation group was treated with pressure vaccination training combined with auricular point pressing on the basis of routine intervention. The results showed that the treatment plan of the control group could improve the sleep quality of diabetic patients on the one hand, and significantly reduce their anxiety and depression on the other hand. Lei Jindi et al.[30] compared and observed 63 cases of elderly diabetic patients with insomnia in 126 outpatients. Both groups of patients received sedative and sleeping drugs. The control group received routine nursing intervention program, and the observation group received routine nursing + auricular point pressing bean intervention program. Finally, it was concluded that the intervention program of auricular point pressing bean combined with drug therapy could significantly improve the sleep status of patients and improve the clinical treatment efficiency of patients with symptoms such as difficulty in falling asleep and difficulty in waking up. Chen Yinhua et al.[31] compared and observed 30 cases of 60 patients respectively. The total clinical effective rate of the observation group was 96.67 %, which was worthy of promotion in clinic.

### 3.2.4. Other remedies

After a lot of literature reading combined with clinical work, it is found that in addition to our common traditional Chinese medicine therapy, there are many less commonly used but very effective treatment methods. The following is a brief description, in order to develop new ideas for clinical treatment.

Li Jingjing et al.[32] randomly divided 79 patients with diabetic peripheral neuropathy accompanied by insomnia into observation group(40 cases in total) and control group(39 cases in total) according to the order of treatment. The patients in the control group were given traditional Chinese medicine fumigation and washing intervention, and the patients in the observation group were given traditional Chinese medicine fumigation and washing combined with Hufu copper needle scraping intervention. The final results showed that traditional Chinese medicine fumigation and washing combined with Hufu copper needle scraping can significantly improve the clinical symptoms of limb pain, numbness and discomfort, improve nerve conduction velocity, and improve sleep quality. Pan Lili et al.[33] grouped 90 patients with diabetes and insomnia. The control group(45 cases) was given oral estazolam, and the observation group(45 cases) was given lavender essential oil acupoint massage. After the same treatment cycle, it was found that the two groups were statistically significant, and the effective rate of the observation group was 87.8 %. In order to clarify that lavender essential oil massage has a significant effect on the improvement of sleep quality in patients. Zhang Xiaoyan et al.[34] randomly divided 80 patients into treatment group(40 cases) and control group(40 cases). The control group was given routine oral medication and good health guidance. The treatment group was treated with traditional Chinese medicine package, stone needle ironing combined with physical identification on the basis of the control group. The results showed that the total effective rate of the treatment group was 89 %(significantly higher than 55 % of the control group), indicating that the treatment method can significantly improve the sleep quality of patients, which is worthy of clinical promotion. Yu Daofang et al.[35] compared and grouped 86 patients with diabetes and insomnia. The control group received routine treatment, and the treatment group was treated with plantar massage combined with traditional Chinese medicine foot bath on the basis of the control group. After the same time of treatment, it was found that the therapy effectively enhanced the effect of blood glucose control. While improving the sleep quality of patients, it greatly shortened the sleep waiting time, which was worth promoting. Xiang Guizhen et al.[36] used the method of regulating spirit created by Xiong Lixin[37] in the treatment of patients with diabetes and insomnia for further study. They were divided into control group and observation group with 100 cases in each group. The final result is that the three-step method of regulating spirit can improve the sleep quality of patients with type 2 diabetes and play a good role in stabilizing the blood glucose of patients to a certain extent.

## 4. Conclusion

In recent years, traditional Chinese medicine has achieved good results in the treatment of type 2 diabetes with insomnia. In clinical practice, the use of traditional Chinese medicine treatment, whether internal or external treatment, has fully reflected the advantages of definite efficacy, small side effects, and difficulty in addiction. However, by consulting the relevant literature in recent years, it is not difficult to find that most of the research on the treatment of the disease by traditional Chinese medicine comes from the evaluation of clinical efficacy, and the research on the internal mechanism of the treatment is not deep enough. There is also a small sample of randomized controlled trials, the results of which have a certain degree of deviation. I think that type 2 diabetes with insomnia is a kind of psychological factors and physical factors of the disease, in the use of traditional Chinese medicine treatment at the same time, should also strengthen the psychological intervention of patients, so as to enhance the therapeutic effect.

On this basis, continue to strengthen the basis of traditional Chinese medicine treatment, experimental rigor and clinical and therapeutic mechanism of research, I believe that will gradually establish a treatment system with Chinese characteristics.

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