

Research Progress of Traditional Chinese Medicine in the Treatment of Diabetes Mellitus Complicated with Anxiety and Depression

Lin Zhang¹, Zongliang Song^{2,*}

¹Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

²Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang 712000, Shaanxi, China

*Correspondence Author

Abstract: *In this era of continuous enrichment of material life, diabetes has been generally considered to be one of the diseases that seriously endanger health. Its complications are diverse, constantly eroding the human body's heart, brain, kidney, blood vessels, nerves, etc., to the patient's emotional spirit also brought negative effects. Diabetes combined with anxiety and depression is one of the most common chronic complications of diabetes. The emotional disorders and suicidal tendencies caused by anxiety and depression have become a major problem of social concern. At present, the treatment of this disease is mostly treated with anti-anxiety and antidepressant drugs, but a series of problems such as large side effects, long treatment cycle, high price and poor patient dependence lead to poor treatment effect. Traditional Chinese medicine has the advantages of multi-target, low price and small adverse reactions. It has achieved remarkable results in the treatment of diabetes with anxiety and depression. This paper is mainly to systematically and comprehensively summarize and elaborate the treatment of diabetes mellitus with anxiety and depression in recent years, so as to provide more powerful evidence and more effective methods for future clinical treatment.*

Keywords: Diabetes combined with anxiety and depression, TCM treatment, Research progress.

1. Introduction

The pathogenesis of diabetes is mainly due to the lack of insulin secretion and / or the possibility of insulin resistance due to the possible obstacles in the absorption and utilization of insulin. First of all, the blood glucose concentration of diabetic patients will be higher than the normal range, with 'three more and one less' as the typical clinical manifestations, with polydipsia, polyuria and polyphagia as the manifestations of 'three more', and 'one less' is mainly reflected in the weight loss and emaciation of patients with high glucose. Diabetes is the most common metabolic disease in endocrine and metabolic diseases. At present, the etiology of diabetes is not clear, but in general, it is related to genetic factors, environmental factors and patients' autoimmune defects. The treatment of diabetes mainly follows the principle of "five carriages." If the long-term blood glucose control of diabetic patients is not up to standard, it will lead to the damage of heart, kidney, eye, blood vessel, nerve and other multi-system functions, resulting in a series of chronic complications. According to statistics, the prevalence of diabetes in China has reached 12.8%, and there are more than 140 million people with diabetes. The prevalence of diabetes with anxiety and depression is significantly higher than that of non-sugar patients [1]. Anxiety disorders are mainly manifested as excessive worry, persistent or paroxysmal anxiety, fear and tension, and high alertness. Depression is characterized by low mood, slow thinking, no interest in things or decline, lack of pleasure, three asymptomatic (useless, helpless, hopeless), suicidal behavior. Diabetes mellitus with anxiety and depression is one of the most common chronic complications. It is the product of the coexistence and interaction of anxiety and depression. Traditional Chinese medicine is effective in the treatment of diabetes with anxiety and depression in various aspects such as internal treatment, external treatment, and psychomotor intervention. Now, the understanding and treatment of

diabetes with anxiety and depression in traditional Chinese medicine are summarized as follows:

2. Exploration of TCM Disease Name

There is no independent record of the name of traditional Chinese medicine for diabetes with anxiety and depression in the history of traditional Chinese medicine, and there is no exact name of traditional Chinese medicine. Usually, diabetes and anxiety and depression are combined and named. Traditional Chinese medicine for diabetes belongs to the category of 'diabetes', while anxiety and depression are considered to belong to the category of 'depression syndrome' in traditional Chinese medicine. Therefore, diabetes combined with anxiety and depression can be considered to belong to the category of 'diabetes combined with depression syndrome'. Poor treatment of diabetes can easily lead to emotional disorders leading to anxiety and depression, diabetes can easily lead to depression syndrome has been recorded in ancient times, such as Tang · Wang Tao's 'Waitai Miyao' recorded: 'Diabetes patients, sad and haggard, hurt.'; yanqing Ye Tianshi's 'Clinical Guide Medical Case' said: 'Sad mood, spontaneous combustion of internal fire, is a major disease. It can be seen from the above that patients with diabetes are prone to sadness and depression, and this depression will in turn aggravate the progress of diabetes.

3. Exploration of Etiology and Pathogenesis of Traditional Chinese Medicine

Chinese medicine believes that the cause of the disease is mainly related to emotional factors, 'Spiritual Pivot · Five Changes': 'Anger is upside down, chest accumulation... Heat will eliminate the skin, so it is Xiaodan'. The liver is mainly regulated and evil depression, anger hurts the liver, liver qi stagnation, loss of catharsis, disorder of qi movement, fluid

can not be infused into the skin, easy to fold phlegm and silt. Tang · Wang Tao's "secret to Taiwan" records: 'Diabetes patients, sad and haggard, sad. "Qing · Ye Tianshi 's' Clinical Guide Medical Case' said: 'Sad mood, internal fire spontaneous combustion, is a major disease. It can be seen from the above records that emotional factors are closely related to this disease, Low mood will make the disease more and more serious, which is not conducive to the prognosis and prognosis of the disease, but will increase the disease. The disease involving the liver is a common view of most ancient physicians. The failure of liver qi to regulate external expression leads to stagnation of qi movement and endogenous congestion. Over time, it will involve other organs and affect the functional expression of other organs. Therefore, due to the deficiency syndrome caused by excess syndrome, the final inclusion of deficiency and excess is the key to the occurrence and development of this disease [2-3]. Chen Zhaoyu et al. [4] from the perspective of meridians and collaterals, according to the development process of diabetes depression syndrome that its pathogenesis is mainly qi stagnation, qi and yin deficiency, phlegm heat toxin and blood stasis caused by blood stasis, for a long time to produce phlegm turbidity, blood stasis, heat toxin and other pathological products, eventually leading to diabetes depression syndrome. Lu Yanni et al. [5] believed that the syndrome of diabetes depression is the syndrome of deficiency in origin and excess in superficiality, mainly due to the imbalance of emotions, which leads to liver qi stagnation and liver depression transforming into fire. According to the principle of mutual restraint, liver fire is exuberant and spleen qi is deficient, spleen is not healthy, and phlegm stasis is endogenous stagnation, which leads to the disorder of qi movement of zang-fu organs, and the poor operation of qi, blood and body fluid, resulting in the manifestations of emotional abnormalities such as suspicion, anxiety, depression and irritability. Zheng Wei et al. [6] believed that the key pathogenesis of diabetes depression syndrome is Xuanfu stagnation and liver collateral stasis. The development of the disease is divided into early, middle and late stages. In the early stage of the disease, it is mainly due to the disorder of Xuanfu and the stagnation of liver collaterals. In severe cases, liver depression transforms into fire, fire and heat consume healthy qi, damage body fluid, and aggravate the development of the disease. In the middle and late stages, the five zang-organs and six fu-organs are deficient, and the long-term disease affects the collaterals, resulting in collateral stasis.

4. Traditional Chinese Medicine Internal Treatment

Lei Shihui et al. [7] and others believe that the main pathogenesis of diabetes depression syndrome is 'qi and yin deficiency, blood stasis and liver depression', and the rule of law in traditional Chinese medicine is to replenish qi and nourish yin, remove blood stasis and resolve depression. The treatment is based on the method of replenishing qi and nourishing yin, removing blood stasis and relieving depression. Zuogui pill is the basic prescription, supplemented with qi-tonifying and depression-relieving drugs, and named Zuogui Jiangtang Jieyu prescription. Its prescription compatibility is: Rehmanniae Radix Praeparata as its monarch drug, nourishing kidney and benefiting essence,

Corni Fructus and Lycii Fructus as ministerial drugs, tonifying liver and kidney, Cuscutae Semen, Achyranthes bidentata, Eucommiae Cortex, Astragalus membranaceus, Salviae Miltiorrhizae Radix et Rhizoma and Moutan Cortex as adjuvants, tonifying liver and kidney, strengthening bones and muscles, removing blood stasis, turmeric and Hypericum perforatum as enablers, promoting qi and resolving depression. The study used a gradient concentration of Zuogui Jiangtang Jieyu Decoction to intervene in a rat model of diabetes mellitus complicated with depression. It was concluded that Zuogui Jiangtang Jieyu Decoction may regulate the Sema7a / ITGB1 / FAK signal and target the axon guidance pathway to play a role in the treatment of diabetes mellitus complicated with depression.

Zheng Da et al. [8] used Zaoren Anshen Capsule to explore whether Zaoren Anshen Capsule can reduce and alleviate the anxiety and depression of diabetic patients with angina pectoris during PCI perioperative period. In this study, 142 patients who met the inclusion criteria were selected and divided into two groups. The control group received routine perioperative treatment and nursing, and the observation group was given oral Zaoren Anshen capsule. After 4 weeks of treatment, the Hamilton Anxiety Scale (HAMA) score, Hamilton Depression Scale (HAMD) score, incidence of anxiety and depression, serum myeloperoxidase (MPO) and 5-hydroxytryptamine (5-HT) levels, incidence of MACE within 3 months, social disability screening scale (SDSS) score and health survey summary (SF-36) were observed and compared. From the experimental results, it can be proved that Zaoren Anshen Capsule can greatly reduce and alleviate the incidence of anxiety and depression in the perioperative period of PCI in elderly patients with angina pectoris and diabetes, and can effectively improve the social function and quality of life of patients.

Feng Zhanrong et al. [9] used Chaihu Jia Longgu Muli Decoction (specific drug composition: 24 g of Radix Bupleuri, 9 g of Radix Scutellariae, 30 g of calcined keel, 30 g of calcined oyster, 9 g of Ginseng, 9 g of Ramulus Cinnamomi, 9 g of Poria, 6 g of Pinellia, 6 g of Rhubarb, 9 g of Ginger, 6 pieces of Jujube) to treat diabetic constipation with depression. The changes of constipation symptoms (including fecal trait score and weekly defecation frequency), Hamilton Depression Scale (HAMD) score, blood glucose index, blood lipid index and homocysteine (Hcy) level before and after 8 weeks of treatment were compared between the two groups. It was found that Chaihu Plus Longgu Muli Decoction was effective in the treatment of diabetic constipation complicated with depression. It can effectively improve the symptoms of constipation, promote defecation, relieve depression and anxiety, regulate blood glucose and blood lipid metabolism, and reduce Hcy level. It is safe and reliable and worthy of clinical reference.

Shen Hua et al. [10] used Peiyuan Bushen Shugan Jieyu Recipe (prescription: Bupleurum 30g, Paeonia 15g, Aurantii 15g, Morinda 12g, Dodder 12g, Codonopsis 10g, Zhigancao 9g) to treat type 2 diabetes mellitus with depression. The clinical efficacy and related mechanisms of patients with depression. The Hamilton Depression Scale (HAMD) score, blood glucose index, inflammation index, oxidative stress index, neuroendocrine index, clinical efficacy and incidence

of adverse reactions were observed and compared between the two groups before and after treatment. In conclusion, Western medicine combined with Peiyuan Bushen Shugan Jieyu Decoction has a more obvious effect on depression and blood glucose regulation in patients with type 2 diabetes mellitus complicated with depression. The mechanism may be related to the regulation of inflammation-oxidative stress-neuroendocrine network imbalance.

Liu Meilian [11] studied the use of Xuefu Zhuyu Decoction (Taoren 12 g, Danggui, Shengdihuang, Honghua, Niuxi each 9 g, Chishao, Zhiqiao each 6 g, Chuanxiong, Jiegeng each 4.5 g, Chaihu, Gancao each 3 g) in the treatment of diabetes depression CJCM clinical study of traditional Chinese medicine in 2023 Vol.15 No.24 Chinese medicine · wet syndrome · diabetes-57-syndrome, while studying Xuefu Zhuyu Decoction to improve the level of glucose metabolism and depression-related scale scores. It was found that Xuefu Zhuyu Decoction also has a corresponding improvement effect on C-reactive protein, homocysteine, brain-derived neurotrophic factor and other indicators. It is believed that the treatment of diabetes depression syndrome may be related to Xuefu Zhuyu Decoction can improve the above indicators.

5. Traditional Chinese Medicine External Treatment

Many related studies have shown that the external treatment of traditional Chinese medicine, including different types of acupuncture and moxibustion therapy, sticking therapy, traditional Chinese medicine fumigation, traditional Chinese medicine directional penetration therapy and so on, has a very obvious effect in the treatment of diabetes mellitus complicated with anxiety and depression, which can reduce adverse reactions and family burden. I will describe it from two aspects : acupuncture and sticking.

Dong Shiqiu et al. [12] divided 40 patients into two groups in the observation of the clinical efficacy of the treatment of type 2 diabetes mellitus with depression and anxiety by using the disc-shaking acupuncture combined with the thumbtack needle. The conventional group was given the traditional acupuncture method, and the disc-shaking group was given the disc-shaking acupuncture combined with the thumbtack needle. The Hamilton Depression Scale, Hamilton Anxiety Scale, fasting blood glucose, glycosylated hemoglobin, 5-hydroxytryptamine and norepinephrine levels were compared between the two groups after treatment. The results showed that the evaluation scale and related indexes of the disc-shaking group were significantly better than those of the traditional group after treatment. Therefore, it was concluded that the disc-shaking acupuncture combined with press-needle can significantly improve the depression and anxiety state after type 2 diabetes.

Liang Zhimin et al. [13] randomly divided 62 patients with diabetes mellitus complicated with anxiety, depression, liver depression and kidney deficiency type into 2 groups. Both groups of patients were routinely given oral hypoglycemic drugs. The control group was given oral Flupentixol and Melitracen Tablets. The patients in the observation group selected auricular points Shenmen, endocrine, sympathetic,

subcortical, heart, liver, spleen, kidney and other beans. At the same time, they were treated with the decoction of Yiguan Decoction. The results showed that compared with the control group, the patients in the observation group had a more significant effect after treatment.

Li Qiaoyun et al. [14] used traditional Chinese medicine combined with acupoint application to treat patients with type 2 diabetes and depression. In the observation of the curative effect, 40 patients in each group were given routine oral hypoglycemic drugs, strict diabetic diet and moderate exercise in the control group. The observation group increased traditional Chinese medicine and acupoint application. After one month, the blood glucose index, HAMD score and TCM syndrome score were compared between the two groups. The results showed that the treatment effect of the observation group was more obvious, and it was safe and more reliable.

Chen Siyu [15] proposed the treatment of liver depression and spleen deficiency syndrome with blood-nourishing and liver-softening acupuncture. The acupuncture method mainly selected bilateral Zhigou point, Yanglingquan point, Yinlingquan point, Sanyinjiao point, Xuehai point, Zusanli point and Taichong point. After 12 weeks of treatment for 3 cycles, the four scale scores, glucose metabolism indexes and TCM syndrome scores of these patients were systematically evaluated. Finally, it was shown that the effective rate of this acupuncture treatment was nearly 90%.

Gou Wenyi [16] believes that diabetes and depression syndrome often coexist, so he puts forward the method of simultaneous treatment of body and mind in the treatment, and divides diabetes depression syndrome into four stages according to the onset period of the disease. The distribution of syndromes is as follows : early stage is liver depression and qi stagnation period, middle stage is phlegm-fire obstruction period, late stage is liver-kidney yin deficiency period, and late stage is yin-yang deficiency period. At the same time, the use of psychotherapy methods, including taking measures in the patient 's cognition and behavior, using music to stabilize the patient 's mood and then relax it, listening more and communicating more with the patient at the same time, so that the patient feels supported and recognized.

6. Conclusion

To sum up, traditional Chinese medicine plays an indispensable role in the treatment of diabetes mellitus complicated with anxiety and depression, which has certain research and development. Western medicine not only causes economic burden to patients, but also has great side effects. Long-term medication will bring psychological pressure to patients and lead to poor dependence. In short, the curative effect is not good. Compared with western medicine, in this era of vigorously advocating the culture of traditional Chinese medicine, on the basis of contemporary research progress, traditional Chinese medicine not only has great advantages in controlling glucose metabolism indicators and improving anxiety and depression, but also can be used as a more lasting and long-term treatment decision in combination with its characteristics of small side effects, low cost and high safety. However, at present, there are still inconsistencies in the

syndrome classification of diabetes mellitus complicated with anxiety and depression. The sample size of clinical research is relatively limited. The accurate syndrome differentiation of diabetes mellitus complicated with depression and its etiology and pathogenesis need to be further studied.

References

- [1] Guidelines for the prevention and treatment of type 2 diabetes in China (2020 edition) (II) [J]. Chinese Journal of Practical Internal Medicine, 2021, 41(9):757-784.
- [2] Wu Qunli. Diabetic depression and diabetes with 'depression syndrome' and its traditional Chinese medicine treatment [J]. Chinese clinicians, 2006, (05):13-15.
- [3] Xiao Wen, Yang Min, Yang Dongdong. Analysis of TCM Syndrome Characteristics of Diabetes Mellitus with Depressive Disorder [J].Jilin Medicine, 2013, 34(09):1733-1734.
- [4] Chen Zhaoyu, Huo Jingjing, Yu Shijia. Discussion on Diabetes Depression Syndrome Based on Collateral Disease Theory [J].Chinese Modern Doctor, 2024, 62(07):130-132.
- [5] Lu Yanni, Zhou Zhongqin, Chen Mengzi, Luo Xiamin, Li Jiwu. TCM research progress on diabetes mellitus complicated with anxiety and depression [J].Chinese folk therapy, 2023, 31(07):107-110.
- [6] Zheng Wei, Wu Qiaomin, Feng Xiaohong, et al. Based on ' Xuanfu Yubi, Ganluo Yuzu ', to explore the etiology and pathogenesis of diabetes depression syndrome [J].Zhejiang Journal of Integrated Traditional Chinese and Western Medicine, 2023, 33(1):86-88.
- [7] Lei Shihui, Li Wei, Wang Jinxi, Liu Jian, Meng Pan, Wang Yuhong, Yang Hui. Based on GSEA and STEM analysis methods, we explored the mechanism of Zuogui Jiangtang Jieyu Decoction in the treatment of diabetes mellitus complicated with depression [J].Chinese Journal of Experimental Prescriptions, 1-10.
- [8] Zheng Da, Li Fengde, Tan Ruijuan, Liu Wei, Song Pengcheng. Effect of Zaoren Anshen Capsule on anxiety, depression and MACE in elderly patients with angina pectoris and diabetes during PCI perioperative period [J].Chinese hospital medication evaluation and analysis, 2023, 23(10):1214-1217.
- [9] Feng Zhanrong, Xu Tieyan, Zhao Qian, Ding Ying, Xu Yue, Sun Xiaoxiao. Clinical study of Chaihu Jia Longgu Muli Decoction in the treatment of diabetic constipation with depression [J].Hebei Traditional Chinese Medicine, 2023, 45(10):1609-1613.
- [10] Shen Hua, Wang Shaoyan, Yuan Jianhua. Observation on the efficacy of Peiyuan Bushen Shugan Jieyu Decoction in the treatment of type 2 diabetes mellitus complicated with depression [J].Modern Journal of Integrated Traditional Chinese and Western Medicine, 2023, 32 (17):2428-2431+2439.
- [11] Liu Meilian. Xuefu Zhuyu Decoction in the treatment of diabetes mellitus with depression syndrome in 29 cases [J].Bright Chinese Medicine, 2022, 37(01):83-86.
- [12] Dong Shiqiu, Gao Xiao, Qiao Wenqi, Tao Xuelian, Wang Shiqing, Tian Yuan. Clinical study of disc-shaking acupuncture combined with intradermal needle in the treatment of depression and anxiety after type 2 diabetes [J].Clinical Journal of Acupuncture and Moxibustion, 2023, 39 (06):26-29.
- [13] Liang Zhimin, Zhang Hongzhen, Dong Huijie. Clinical Observation on the Treatment of Type 2 Diabetes Mellitus with Depression and Anxiety Disorder by Modified Yiguanjian Combined with Auricular Point Pressing Beans [J].Chinese Folk Therapy, 2021, 29(04):80-83.
- [14] Li Qiaoyun, Lin Guangzhen, Xie Yuanfang, Zhang Jianye. Observation on the efficacy of acupoint application of traditional Chinese medicine combined with traditional Chinese medicine decoction in the treatment of type 2 diabetes mellitus complicated with depression [J].Chinese prescription medicine, 2020, 18 (02):130-131.
- [15] Chen Siyu. Observation on the efficacy of Yangxue Rougan acupuncture in the treatment of type 2 diabetes mellitus with emotional disorders of liver depression and spleen deficiency [D].Tianjin University of Traditional Chinese Medicine, 2021.
- [16] Gou Wenyi. Physical and mental treatment of diabetes depression syndrome [J].E-magazine of clinical medical literature, 2018, 5(21):5-6.
- [17] Zhang Hong, Li Wei, Zhao Kai, Du Yawen, Wang Afang, Dong Xia, Meng Xiangran, Bai Xiaoxu. A randomized controlled study of auricular point comprehensive therapy in the treatment of patients with diabetes mellitus complicated with anxiety and depression [J].Beijing Traditional Chinese Medicine, 2024, 43(06):618-621.
- [18] Deng Lanlan, Zhang Yan, Li Chunling. Effect of cognitive behavioral therapy on emotional intervention in patients with type 2 diabetes mellitus with mild to moderate anxiety and depression in community [J].China Health Education, 2024, 40(07):647-651.
- [19] Liu Jian, Yang Hui, Zhao Hongqing, Li Wei, Liu Zhuo, Wang Yuhong. Based on the microglia-neuron crosstalk signal CD300f / TLR4, to explore the protective effect and mechanism of Zuogui Jiangtang Jieyu Recipe on hippocampal synaptic microenvironment damage in rats with diabetes mellitus complicated with depression [J].Chinese Journal of Traditional Chinese Medicine, 1-10.
- [20] Hu Xiaomin, Kong Xiaoming, Sun Yan, Zhang Li, Lv Siwen, Xie Pengyu, Guo Yu. Study on the correlation between blood glucose fluctuation and lipid metabolism characteristics in elderly patients with depression and type 2 diabetes mellitus [J].Clinical medical research and practice, 2024, 9(16): 64-67.
- [21] Shen Hua, Wang Shaoyan, Yuan Jianhua. Observation on the efficacy of Peiyuan Bushen Shugan Jieyu Decoction in the treatment of patients with type 2 diabetes mellitus complicated with depression [J].Modern Journal of Integrated Traditional Chinese and Western Medicine, 2023, 32(17):2428-2431 +2439.
- [22] Liang Zhimin, Zhang Hongzhen, Dong Huijie. Clinical observation of Yiguanjian combined with auricular point pressing beans in the treatment of type 2 diabetes with depression and anxiety disorder [J].Chinese folk therapy, 2021, 29(04):80-83.
- [23] Li Qiaoyun, Lin Guangzhen, Xie Yuanfang, Zhang Jianye. Observation on the efficacy of acupoint application of traditional Chinese medicine combined

with traditional Chinese medicine decoction in the treatment of type 2 diabetes mellitus complicated with depression [J].Chinese prescription medicine, 2020, 18(02):130-131.