

Clinical Application Research on the Treatment of Obesity Combined with Type 2 Diabetes Mellitus by the Method of Dispeling Depression and Clearing Heat

Xinyue Fan^{1,a}, Songtao Chen^{2,b}, Shiqi Liang^{1,c}, Wen Xie^{1,d}, Lu Shen^{3,e,*}

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

²Xianyang Hospital of Yan'an University 712099, Shaanxi, China

³Shaanxi Provincial Hospital of Chinese Medicine, Xi'an 710003, Shaanxi, China

^aemail:2389169311@qq.com, ^eemail:Lucky931116@163.com,

*Correspondence Author

Abstract: *With the progress of the times, the key pathogenesis of diabetes mellitus has gradually changed. Tong Xiaolin and other medical doctors, in response to the lack of Chinese medicine in the theoretical system of type 2 diabetes mellitus combined with obesity, after a long period of clinical practice, and combined with the theory of the "Nei Jing", put forward the core mechanism of type 2 diabetes mellitus combined with obesity as "middle fullness and internal heat", and created the "dispeling depression and clearing heat" as the basic treatment method [1]. The purpose of this paper is to review the clinical application research of the method of dispeling depression and clearing heat in the treatment of type 2 diabetes mellitus combined with obesity, which provides a reference basis for further in-depth research and rational use of medication.*

Keywords: The method of dispeling depression and clearing heat, Type 2 diabetes, Obesity, Middle fullness and internal heat, Clinical application.

1. Introduction

Type 2 diabetes mellitus (T2DM) is a pervasive metabolic disease caused by a combination of factors and is characterized by insufficient insulin secretion or a weakened cellular response to insulin, resulting in hyperglycemia. According to the latest Global Diabetes Map data: China's total number of diabetes patients reaches 140 million, ranking first in the world [2], more than 90% of whom have type 2 diabetes mellitus (T2DM), and 80% of these patients have obesity [3]. Challenges faced by TCM practitioners in the treatment of diabetes stem in part from differences in the understanding of diabetes. Traditional Chinese medicine categorizes diabetes mellitus as a "thirst-quenching disease" and bases its diagnosis on the clinical symptoms of "excessive drinking, excessive eating, excessive urination and weight loss". However, modern medicine diagnoses diabetes primarily on the basis of blood glucose levels, which does not exactly correspond to the TCM concept of "quenching thirst". Therefore, the hypoglycemic effect of TCM in treating diabetes may not be satisfactory. A group of clinicians found that 80% of patients with type 2 diabetes lacked the typical "three more and one less" symptoms, and 50% had no symptoms [4], especially in patients with type 2 diabetes combined with obesity. Based on the traditional Chinese medicine theory of "three eliminations", the proposed theory of Yin deficiency and dry heat does not fully cover the pre-diabetic and early stages of diabetes mellitus, and patients in these stages often do not show the typical symptoms of "three more and one less". With the deepening of the understanding of diabetes mellitus, some medical doctors put forward new theories, such as "middle fullness and internal heat", and created "the method of dispeling depression and clearing heat", and applied it to the treatment of type 2

diabetes mellitus combined with obesity, which has achieved remarkable clinical results. This new treatment method is not only innovative in theory, but also verified in practice, which provides new perspectives and methods for Chinese medicine treatment of diabetes mellitus.

2. Etiology and Pathogenesis of Type 2 Diabetes Mellitus with Obesity

1) Eating too much fat and sweet leads to congestion of Qi in the middle Jiao: With the improvement of people's living standards, it is reported [5]: People with diabetes generally have some similar eating habits before the onset of the disease, including eating large amounts, preference for sweets, preference for fatty foods, and insufficient intake of vegetables. According to TCM theory, excessive intake of greasy and sweet foods will interfere with the normal functioning of the spleen and stomach, causing obstruction of qi in the middle jiao region, affecting its transformation function. This in turn leads to the development of depression and internal heat, which is manifested as a condition characterized by a sweet and greasy sensation in the mouth. This state is known as "middle fullness", which means that the middle jiao (spleen and stomach) is filled with food, resulting in poor qi flow.

2) Emotional imbalance leads to internal heat: Prolonged tension and heavy stress may lead to liver qi stagnation, which affects the flow of qi, which in turn transforms into internal fire. When this internal fire is vigorous, it will rush up to the stomach, burn the gastric juices, and at the same time cause the loss of fluid in the lower part of the body, which may eventually lead to diabetes. According to recent research [6]: Chronic exposure to mental stress activates the ventromedial

nucleus of the hypothalamus (VMH), which in turn stimulates sympathetic nerve activity, resulting in decreased insulin secretion and a consequent increase in blood glucose levels. Clinical studies have shown that emotional states such as depression and anxiety have a significant impact on glycemic management. The mechanism may involve increased cortisol secretion in depressive states, which not only reduces glucose utilization, but may also further impede blood glucose utilization by antagonizing the action of insulin, thereby promoting an increase in blood glucose. In addition, studies have also shown that depression and anxiety are associated with an increase in chronic complications of diabetes [7].

3. Treatment of Type 2 Diabetes Mellitus Complicated with Obesity and Prescription Analysis

For patients with type 2 diabetes mellitus and obesity, TCM attributes the pathogenesis to "middle fullness and internal heat". Based on this theory, the treatment principle of "dispelling depression and clearing heat" was proposed, that is, by regulating the spleen and stomach to relieve the obstruction of qi and organs, and to remove the depression and heat in the body, so as to treat the disease. The treatment of liver and stomach depression and heat is to open up depression and clear the stomach, and the formula is Da Chai Hu Tang. Xiao Chaihu Tang for Gallbladder and Stomach Depressed Heat Symptoms; Treatment of solid heat in the stomach and intestines is to pass the heat through the abdomen and diarrhea, the formula is to regulate the stomach and Cheng Qi Tang [8-11].

3.1 Syndrome of Excess Depression and Heat in the Liver and Stomach

According to the "I Clinical Guidelines for the Treatment of Diabetes Mellitus with New Traditional Chinese Medicines" issued by the State Administration of Drug and Food Supervision in 2002, the Chinese medicine typing and diagnostic criteria are as follows: Clinical manifestations of Liver and Stomach Depressed Heat syndrome include: chest or stomach fullness, dry mouth and bitter tongue, moodiness and irritability, constipation, red tongue and yellow moss, pulse is stringy, smooth and numb. As the main prescription for the treatment of this syndrome, Dachai Hu Tang is composed of Bupleurum chinensis, Scutellaria baicalensis, Pinellia ternata, Coptis chinensis, Rhubarb, White Paeonia, Citrus aurantium, Whole Melon Root, Leech, Peach Kernel etc. Bupleurum chinensis, and Scutellaria baicalensis can relieve the stagnation of the Shaoyang meridian and dissipate the evil heat; Citrus aurantium and rhubarb can relieve the stomach and intestines, and clear the evil heat of the Yangming Sutra; Pinellia ternata is matched with three yellows (scutellaria baicalensis, coptis, rhubarb), and uses the effect of pungent opening and bitter descending, and smooth the middle focus. The compatibility of the whole formula is aimed at soothing the liver and relieving depression, clearing the stomach and reducing fire, so as to achieve the effect of eliminating internal heat, restoring fluid and relieving stagnation. This formula is characterized by bitter cold without hurting the stomach, pungent and warm without dryness, removing stasis without harming righteousness, and the medicines are coordinated with each other and

complement each other, treating both the symptoms and the root cause, especially suitable for the pathogenesis of obese type 2 diabetes patients. Proven by clinical studies [12], After treatment, the blood glucose, the area under the blood glucose curve and HbA1c were significantly reduced at each time point, which could significantly reduce the blood glucose of patients with type 2 diabetes, and the possible mechanism was to reduce the overall blood glucose level, improve the islet function and reduce the degree of insulin resistance by improving the posterior secretion of β cells.

3.2 Gallbladder and Stomach Depressed Heat Certificate

Zhang Jiegu said: "Cure anxiety and quench thirst without eating more, urinate clearly, and it is advisable to have a small chaihui soup." It is the earliest record of the treatment of type 2 diabetes mellitus by the method of dispelling depression and clearing heat, which marks a major innovation in the field of diabetes treatment of traditional Chinese medicine and lays the foundation for the subsequent use of the method of dispelling depression and clearing heat in the treatment of type 2 diabetes. The main symptoms of Xiao Chai Hu Tang are cold and hot, chest and flank bitterness, silent desire to eat, upset and nauseated, bitter mouth, dry throat, dizziness, thin white tongue, and stringy pulse; Composition: bupleurum chinensis, scutellaria, ginseng, pinellia ternata, boiled licorice, ginger, jujubes [13]; In this formula, Bupleurum chinensis, with its bitter and calm nature, acts on the liver and gallbladder meridians, which can penetrate the evil qi of the Shaoyang meridian and relieve the stagnation of the qi machine, so that the semi-surface evil qi of the Shaoyang meridian can be dispelled, so it is used as the main medicine. Scutellaria baicalensis acts as an adjuvant by removing heat evils from the deeper layers of the Shaoyang meridian with its bitter-cold properties. The ascending and dispersing action of bupleurum chinensis is coupled with the descending and draining action of Scutellaria baicalensis to form the basic pairing for harmonizing Shaoyang. Combining the effects of these drugs, The main purpose is to harmonize the Shaoyang meridian and at the same time replenish the stomach qi, so that the evil qi can be relieved, the qi can be restored to normal, the stomach qi can be harmonized, and thus all kinds of symptoms can subside naturally. The results of the study [14] showed: The scores of HbA1c (6.11 ± 1.23)%, FPG (6.14 ± 1.20) mmol/L, 2 hPG and three TCM syndromes (thirst and polydipsia, elimination of grain and hunger, and dry mouth) in the observation group were lower than those in the control group (all $P < 0.05$). The adjuvant use of Xiao Chai Hu Tang in the clinical treatment of patients with T2DM can help reduce the blood glucose level of patients with T2DM, improve the TCM syndrome of patients, and ensure the safety of medication.

3.3 Gastrointestinal Heat Syndrome

The gastrointestinal heat syndrome is based on the combination of abdominal hardness and pain, constipation and hot heat. Although it contains only three kinds of medicinal materials, it is well matched: rhubarb, with its bitter cold nature, plays the role of dissipating heat and laxative, and cleansing the intestines; With its salty and cold characteristics, miscanthus nitrate achieves the effect of clearing heat, softening induration, moisturizing and drying; Boiled licorice

is used to reconcile the laxative effects of rhubarb and miscanthus nitrate, making the whole formula milder. Zou Shu said, the name of this formula is "regulating the stomach and bearing qi", and the function of bearing qi all lies in rhubarb.

4. Brief Summary

In order to make up for the shortcomings of traditional Chinese medicine in the theoretical system of obese type 2 diabetes, following the research path of "practice→ theoretical innovation→ clinical guidance", after hundreds of thousands of clinical diagnosis and treatment practices, and combined with the theoretical basis of "Huangdi Neijing", "middle fullness and internal heat" was proposed as the main pathogenesis of obesity type 2 diabetes, and accordingly, the "dispelling depression and clearing heat" was established as the basic principle of treatment. Specific treatment methods include: for liver and stomach depression fever syndrome, Da Chai Hu Tang is used to open the stomach and clear the stomach; For bile and stomach depression syndrome, Xiao Chai Hu Tang is used; The real heat of the stomach and intestines is mainly based on diarrhea fever, and the stomach and Chengqi decoction are used. These methods not only enrich the theoretical understanding of diabetes in TCM, but also provide valuable exploration for improving the clinical effect of TCM in the treatment of diabetes.

Fund Project

Key project of medical research of Xi'an Municipal Science and Technology Bureau: research related to the optimization of diagnosis and treatment plan for type 2 diabetes mellitus combined with obesity (Project Number: 24YXYJ0016).

References

- [1] Chang Bai, LiuXiming, Zhen Zhong, et al. Apreliminary study on the etiology, pathogenesis and treatment of obese type 2 diabetes mellitus [J]. Beijing Traditional Chinese Medicine, 2008, 27(12): 946-948.
- [2] There are 537 million adults with diabetes in the world, and 140 million in China [N]. Physician's Daily, 2021-12-09(B03).
- [3] Chinese Society of Diabetes. Guidelines for the prevention and treatment of type 2 diabetes mellitus in China (2020 edition) [J]. Int J Endocrinology and Metabolism, 2021, 41(05): 482-548.
- [4] Department of Disease Control, Ministry of Health, Chinese Society of Diabetes. Guidelines for the prevention and treatment of diabetes mellitus in China [M]. Beijing: Peking University Medical Press, 2004: 3-5.
- [5] Zhu AINU, Jin Feijun. Investigation of pre-onset diet and lifestyle habits of patients with type 2 diabetes mellitus [J]. Zhejiang J Prev Med, 2000, 16(1): 50.
- [6] Ti Zhao, Hong Mao, Clinical study of depression in diabetic population [J]. China Journal of Diabetes Mellitus, 2002, 10: 272-275.
- [7] Wang Aihua, Hu saidgang. Clinical study of depression and anxiety inpatients with diabetes mellitus [J]. Shanghai Medical Journal, 2003, 26(8): 574-576.
- [8] Diabetes Branch of Chinese Association of Traditional Chinese Medicine. Guidelines for the prevention and treatment of diabetes mellitus in traditional Chinese medicine [M]. Beijing: China Publishing House of Traditional Chinese Medicine, 2007: 1-3.
- [9] Liu Hongfang, TONG Xiaolin, PARK Xinying. Identification of hepatic and gastric depression syndrome in the treatment of thirst-quenching disease [J]. Chinese Journal of Basic Medicine of Traditional Chinese Medicine, 2002, 8(3): 225-227.
- [10] Duan Jun, Tong Xiaolin. A brief discussion on the initial pathogenesis and evolution of thirst disease [J]. Beijing Journal of Traditional Chinese Medicine, 2007, 26(3): 157-159.
- [11] Chen Liang, Tong Xiaolin, Xu Yuan, et al. The treatment of diabetes mellitus [J]. Shanghai Journal of Traditional Chinese Medicine, 2006, 40(1): 32-33.
- [12] Zhao Yu, Chen Liang, Dong Liu, et al. Effect of Kaiyu Qingre Formula on β Cell Function in Obese Patients with Type 2 Diabetes Mellitus Syndrome [J]. Journal of Beijing University of Traditional Chinese Medicine, 2013, 36(07): 488-492+496.
- [13] Du Bin. Cardinal Shaoyang is not conducive to abdominal pain, and Xiao Chai Hu Tang is the main one [J]. Physician Online, 2020, 10(03): 37-37.
- [14] Wu Caixing, Li Kai, Chen Qingfen. Application value analysis of Xiao Chai Hu Tang in the treatment of type 2 diabetes mellitus [J]. Diabetes New World, 2024, 27(08): 101-104.