

Progress of clinical research on treating obese type 2 diabetes based on spleen deficiency and phlegm dampness

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Abstract: In recent years, the number of obese type 2 diabetes patients is increasing, and its clinical pathogenesis is complex. According to the etiology and pathogenesis of traditional Chinese medicine, the syndrome type of spleen deficiency phlegm-dampness is one of the important syndrome types of obese type 2 diabetes. The treatment is based on the method of "invigorating qi and spleen, dispelling phlegm and dampness". Clinical use of acupuncture, massage, traditional Chinese medicine and other traditional Chinese therapy, the treatment effect is quite good. Western medicine treatment mainly focuses on the treatment of hypoglycemic and lipid-lowering drugs. This article reviews the understanding and treatment of Chinese and Western medicine for obese type 2 diabetes, in order to provide reference for the treatment of clinical obese type 2 diabetes.

1. Introduction

With the change of modern diet structure and the acceleration of life pace, the incidence of obesity combined with type 2 diabetes mellitus (T2DM) is increasing year by year. Both obesity and T2DM belong to metabolic diseases, and there is a close correlation between the occurrence and development of the two. Studies have shown that [1], overweight people are more likely to suffer from diabetes, and the probability of overweight people suffering from diabetes is at least twice that of ordinary people, and can even reach more than 40 times in some age groups. Relevant data show that [2]: 41% of Chinese diabetic patients are overweight and 24.3% are obese. There are also relevant studies that [3-5]: Among all clinical syndrome types of obese type 2 diabetes, spleen deficiency and phlegm-dampness type occupy the main aspect, which is also the fundamental pathogenesis of the occurrence and development of obese type 2 diabetes.

2. Understanding of etiology and pathogenesis of TCM

Obesity type 2 diabetes is mainly due to congenital deficiency of temperament, dietary mood disorders, fatigue, internal injury and other factors leading to spleen deficiency, transport of water and grain fine function is affected, resulting in wet turbidities phlegm and silt accumulation, keep not good, the formation of obesity, or phlegm and dampness stasis heat, heat evil aggregation,

dryness injury, hair for thirst.

2.1 Spleen deficiency is the core pathogenesis of obesity Type 2 diabetes mellitus (spleen deficiency as the foundation)

The spleen is the basis of the acquired, the main transport of water and grain fine, water and wet, and can produce Qi and blood, nourish the zang Fu organs, maintain normal physiological activities. "Plain ask ·Meridian" cloud: "Drink into the stomach, swim Qi overflow, lose in the spleen, temper loose essence." "Plain Question ·Jue" said: "The spleen master for the stomach to do its body fluid." The spleen master Shengqing, transport water and grain fine, and fine distributed in the viscera, nourishing body tissues and organs. If the transportation function of the spleen is affected, the metabolism and absorption of fine and micro substances in the body will be affected, resulting in excessive fine and micro substances cannot be transferred to the viscera tissues of the body normally, thus forming phlegm and dampness, which will lead to obesity and even diabetes in the long run. Li Zhenhua, a master of Chinese medicine, believes [6] that spleen is the main location of obesity, and its pathogenesis is mainly due to spleen loss of health transport and accumulation of dampness and phlegm. "Vegetarian Question · Strange Diseases" said: hate spleen five taste entrance, hid in the stomach, spleen to do its essence, body fluid in the spleen, so that the population Gan also, the fat and beautiful hair also. He will eat sweet and fat food. Lingshu ·Evil Qi Zang Fu Disease Shape "also mentioned that spleen pulse could improve hate..... Su-Q ·General Review on Deficiency and Truth recorded:" Hate..... The disease of fat and expensive gypsum also "; "The Complete Book of Jingyue" says: "thirst disease... These statements explain that there is a close relationship between the occurrence of diabetes and the spleen. At the same time, it has been recognized that obesity will lead to the occurrence of diabetes.

2.2 Phlegm and dampness are both pathological products and the key pathogenesis (phlegm and dampness as the standard)

Phlegm-dampness is closely related to obesity and type 2 diabetes. Most doctors of all dynasties believe that "spleen deficiency" will produce "phlegm-dampness" and then cause obesity. It is thought that obesity is closely related to phlegm. He et al. [7] found that people with phlegm-dampness constitution have more spleen deficiency, which is more likely to lead to the occurrence of diabetes, and the syndrome types after the onset of diabetes are also more related to phlegm-dampness. Yan et al. [8] analyzed the theory of etiology and pathogenesis of type 2 diabetes in traditional Chinese medicine and related clinical applications, and believed that dampness is an important pathological factor in the occurrence and development of type 2 diabetes, as well as a key pathogenesis of its clinical onset.

2.3 Spleen deficiency is correlated with phlegm-dampness causality

With spleen deficiency as the basis and phlegm-dampness as the standard, dietary water and grain are received in the stomach, and then converted into fine and micro nutrients through the transport function of the spleen and delivered to the five zang and six fu organs. If the spleen and stomach function is normal, the viscera, limbs, muscles, fur and other body tissues can be fully nourished, and then can carry out normal functional activities. If spleen deficiency cannot transport water normally, phlegm and dampness will be produced instead. The more diet, the more phlegm and dampness will be formed. On the contrary, if long-term diet is careless, overeating greasy fat and sweet, more than the body's transport capacity, too much water grain fine will turn into phlegm and dampness, if the body phlegm and dampness is too much, depression repress for a long time, it

will also damage the function of the spleen and stomach, resulting in spleen deficiency cannot transport, spleen Yang depression, further lead to increased phlegm and dampness in the body. So the two can cause and effect each other.

3. Understanding of modern medicine

The pathological mechanism of obesity type 2 diabetes is complex, and the main point of view is that the key to the pathogenesis is the insulin resistance caused by obesity and overweight, which leads to hyperinsulinemia, resulting in the disorder of glucose and lipid metabolism in the body, and eventually the formation of diabetes [9]. For type 2 diabetes mellitus with spleen-deficient phlegm-dampness obesity, relevant studies [10] suggest that its occurrence may be closely related to stress of endoplasmic reticulum, which plays an important role in lipid metabolism, protein synthesis, processing, transportation, etc. [11]. Meanwhile, proteins with different functions are needed to carry out the functions of the spleen to carry water and grain and water and liquid. Relevant studies have found that [12] some pathological stress conditions will destroy the homeostasis of the endoplasmic reticulum, cause the occurrence of endoplasmic reticulum stress, lead to the accumulation of unfolded or misfolded proteins in the endoplasmic reticulum lumen, affect metabolic regulation, and then cause insulin resistance, and eventually lead to the occurrence of T2DM and obesity.

4. Chinese and Western medicine treatment

4.1 TCM is based on "invigorating qi and spleen, eliminating phlegm and dampness"

4.1.1 TCM treatment

According to the key pathogenesis of spleen deficiency and phlegm dampness in obesity type 2 diabetes, TCM mainly selects the prescriptions for invigorating spleen and removing dampness as the main efficacy in the treatment of obesity type 2 diabetes. Studies have found that in recent years, the commonly used drugs for obesity type 2 diabetes are mainly traditional Chinese medicine for invigorating qi and invigorating spleen and dehumidifying, including poria codonopsis, atractyloides atractyloides, etc. Reflecting spleen deficiency and phlegm dampness as one of the important syndrome types of obesity type 2 diabetes, it fully reflects the treatment principle of TCM based on dialectical treatment, and the treatment also adopts the method of invigorating spleen, removing phlegm and dehumidification [13]. According to the pathogenesis of spleen deficiency and phlegm dampness, the prescription of invigorating spleen and dampness is selected for clinical application. Shi et al. [5] found that the application of self-designed Jianpi Huashi formula in the treatment of obese type 2 diabetes can regulate the metabolism of glucose and lipid by improving the corresponding signal transduction pathway, significantly improve the insulin resistance of patients, reduce the blood sugar level in patients with spleen deficiency phlegm-dampness obesity T2DM, reduce the accumulation of body fat, and thus reduce body weight. Li et al. [14] used Huangqi Erzhu Decoction to treat 66 obese type 2 diabetes patients with spleen deficiency phlegm dampness, and finally found that the application of Huangqi Erzhu decoction to treat obese type 2 diabetes can improve the insulin resistance of patients to a certain extent, and then increase insulin sensitivity, so as to improve the level of blood sugar and lipid in the body.

4.1.2 Treatment of TCM combined with other TCM characteristics

Traditional Chinese medicine therapy combined with traditional Chinese medicine, such as

acupuncture and massage, traditional Chinese medicine, etc., to achieve better curative effect. Relevant data analysis research found that the most commonly used acupuncture and moxibustion therapy in the treatment of obese type 2 diabetes points are Zusanli, Zhongwan, Sanyinjiao, Pishu and other points. Related meridians include foot sun bladder meridian, foot Yangming stomach meridian and Ren pulse. Bei Shu, Wu Shu and Mu points are selected for specific points [15]. Fan et al. [16] combined acupuncture and auricular point sticking to treat obesity type 2 diabetes. The main points were Shu point, Zusanli and Sanyinjiao of the lung, spleen, stomach and kidney, and the pathogenesis of Fenglong and Yinlingquan was based on spleen deficiency and dampness. The results showed that the combination of acupuncture and auricular point sticking can significantly reduce the blood sugar and blood flow velocity in obese type 2 diabetes patients, and the combination of acupuncture and auricular point sticking treatment has a more significant improvement effect on fat percentage. He et al. [17] respectively applied Yincheng Wuling Powder combined with acupoint massage to obese type 2 diabetes patients, and compared the effects of the two methods used alone. Through comparative analysis, they found that the combined application of Yincheng Wuling powder and acupoint massage had better therapeutic effect, and believed that the combined use of the two could play a synergistic role and more effectively reduce the blood sugar and blood fat levels in the body. Improve insulin resistance and reduce body weight. Zheng et al. [18] used Erzhu Erchen Decoction combined with Baduanjin to treat abdominal obesity type 2 diabetes. The combination of pinellia pinellia, tangerine peel, atracylodes atracylodes and whitecractylodes in Erchen Decoction can play the functions of regulating qi, removing phlegm, invigorating spleen and dampness. It is speculated that the relevant mechanism may be through regulating the expression of related inflammatory factors in vivo, so as to play a therapeutic role in abdominal obesity patients with type 2 diabetes.

4.2 Western medicine for obesity type 2 diabetes

4.2.1 Drug therapy

Hypoglycemic and lipid-lowering drugs are used in modern medicine to treat obese type 2 diabetes. Metformin is the most commonly used hypoglycemic drug in clinic, and is also the best choice for oral treatment of obese type 2 diabetes. Metformin can reduce the energy intake of diabetic patients, resulting in minimal weight gain or slight weight loss, with good hypoglycemic effect and relatively small side effects [19]. In addition, metformin therapy can also reduce the incidence of adverse cardiovascular events [20]. With the progression of the disease, dual or triple therapy can be selected according to the characteristics of the patient's condition [21]. You et al. [22] combined liraglutide and metformin in the treatment of obesity type 2 diabetes. Through experimental comparison, it was found that various indexes were improved significantly before and after treatment, which was better than the control group that only took metformin. It also showed greater improvement in pancreatic beta cells and vascular endothelial function, which was more conducive to lowering blood sugar levels and weight loss. Feng et al. [23] applied metformin combined with dagliazine or pioglitazone in the treatment of obese type 2 diabetes, and the experimental results showed that the combination of drugs had better effects. Through comparative analysis, it was believed that it could improve the body's insulin resistance to a certain extent, improve insulin sensitivity, enhance the function of the α and β cells of the pancreas, and effectively improve the metabolism of glucose and lipid. The therapeutic effect of dagliazine combined with metformin is relatively better.

4.2.2 Integrated treatment of traditional Chinese and Western medicine

With the gradual development of traditional Chinese medicine, the combination of traditional Chinese medicine and Western medicine has been applied more and more widely, and the clinical effect is more obvious than when it is used alone. Yu et al. [24] combined Jiawei Liujunzi Decoction with metformin hydrochloride sustained-release tablets, and compared the experimental group treated with metformin hydrochloride sustained-release tablets alone. The results showed that Jiawei Liujunzi Decoction combined with Western medicine had more obvious therapeutic effect, and the study believed that Jiawei Liujunzi decoction could significantly improve the function of pancreatic β cells and reduce the level of blood sugar. Luo et al. [25] used Jiawei Linggui Zhugan Decoction combined with metformin to treat obesity type 2 diabetes, and the study found that its serum glucose and lipid metabolism indexes were significantly improved, and the combined application effect was better than that of metformin monotherapy, which could not only significantly improve clinical symptoms and signs, but also reduce the level of glucose and lipid metabolism indexes. The specific regulatory mechanism, it may be associated with improved insulin resistance. Foreign studies [26] have combined metformin with acupuncture in the treatment of overweight/obese T2DM patients, and found that it may improve insulin sensitivity by inhibiting inflammation and improving lipid metabolism, which is more effective in the treatment of obesity and T2DM compared with metformin monotherapy.

5. Discuss

The number of patients with obesity and type 2 diabetes is increasing. Western medicine understands that the pathological mechanism of obesity and type 2 diabetes is mainly related to insulin resistance. The syndrome type of spleen deficiency and phlegm-dampness can be discussed from endoplasmic reticulum stress. The application of Chinese medicine compound and Chinese medicine therapy in the treatment of obesity type 2 diabetes is increasing, but the specific mechanism of action is still controversial. In the future, more attention should be paid to seeking medical basis for the treatment of obesity type 2 diabetes by Chinese medicine, so that Chinese medicine and its therapy can be widely used and recognized in clinic. In addition, attention should be paid to the lifestyle management of obese patients, including daily low-salt and low-fat diet, weight loss through exercise, prevention of abnormal glucose and lipid metabolism, prevention of chronic complications, improvement of quality of life, and extension of life of patients.

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