

# Professor Liang Junzhao's Clinical Experience in Treating Diabetic Cardiomyopathy

Liu Xin<sup>1</sup>, Liang Junzhao<sup>2</sup>

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

*2 Xi 'An Hospital of Traditional Chinese Medicine, Shaanxi Xi 'An 71000, China*

**ABSTRACT.** *Professor Liang has formed a unique set of academic thoughts and diagnosis and treatment ideas through years of clinical experience. He believes that “deficiency, blood stasis, and phlegm” is the basic pathogenesis of diabetic cardiomyopathy. He uses “Zi, Tong and Xiao” as the treatment method and remarkable clinical effect was obtained.*

**KEYWORDS:** *Diabetic cardiomyopathy, Deficiency and stasis and phlegm, Zi tong xiao, Experience of famous doctors*

## 1. Introduction

Diabetic cardiomyopathy (DCM) is a disease characterized by left ventricular hypertrophy, myocardial fibrosis and impairment of left ventricular systolic and diastolic function in the late stage of diabetes mellitus. It is one of the most common and dangerous complications of diabetes mellitus, and diabetic patients suffer from it. Modern medicine mainly relies on oral hypoglycemic agents and statins to control blood sugar, regulate lipid metabolism of myocardial cells and penetrate them throughout the treatment process of DCM patients. However, the above treatment can only delay the progress of the disease course. In recent years, traditional Chinese medicine has achieved better curative effect on the disease based on syndrome differentiation and treatment. Therefore, the combination of traditional Chinese and western medicine can treat the disease more effectively.

Liang Junzhao, the third famous doctor of traditional Chinese medicine in Shaanxi Province, the first famous doctor of traditional Chinese medicine in Xi 'an City, the successor of the national famous old doctor of traditional Chinese medicine academic experience, the provincial and municipal famous teacher of traditional Chinese medicine, the chief physician of Xi 'an Hospital of Traditional Chinese Medicine, the master's tutor of Shaanxi University of Traditional Chinese Medicine, and the professor of internal medicine of traditional Chinese medicine. Professor Liang has been engaged in the clinical, scientific research and teaching of

cardiovascular treatment with integrated traditional Chinese and western medicine for more than 30 years, forming a set of unique academic thoughts and diagnosis and treatment experience. He thinks that diabetic cardiomyopathy has both symptoms of “diabetes” and “heart disease”. It can be understood as diabetes and heart disease, so it is named “diabetes and heart disease [1]. Its pathogenesis is deficiency, blood stasis, phlegm turbidity, turbid toxin arthralgia and obstruction of the heart and pulse based on deficiency of both qi, blood, yin and yang, with deficiency of qi and yin and obstruction of phlegm, blood stasis and turbidity. In terms of treatment, he proposed that the combined treatment of “zi, tong, Xiao and Jian” has a remarkable effect. The relevant clinical experience in treating diabetic cardiomyopathy is summarized as follows:

## **2. Coexistence of Deficiency, Phlegm, and Blood Stasis is the Key Pathogenesis**

Professor Liang believes that the heart disease of diabetes is located in the heart, and the onset is related to lung, spleen (stomach), kidney and liver. Etiology is mainly closely related to improper diet, emotional disorders, excessive desire for labor or diabetes. Disease is characterized by deficiency of origin and excess, deficiency is characterized by deficiency of qi, blood, yin and yang, and excess is characterized by qi stagnation, blood stasis, phlegm dampness and turbid toxin. It mainly occurs at the end of diabetes. The basic pathogenesis of diabetes is yin deficiency and dryness-heat. It is addicted to eating fat and sweet, causing qi stagnation due to impairment of spleen and stomach, stagnation of qi due to stagnation of water and dampness, stagnation of qi and blood due to stagnation of qi and blood, invasion of muscle due to accumulation of phlegm and blood stasis for a long time, accumulation of turbidity from the exterior into the interior, and turbidity is very toxic. Turbidity and toxicity block up and damage the venation, blockage of the venation, pain due to blockage of the venation, and loss of nourishment of the heart and pulse, resulting in diabetes heart disease.

1) Deficiency: The Origin of Miscellaneous Diseases, Rhinoceros Candle, says: “The disease of Xiaoke is deficient in origin” [2], pointing out that the root of the disease of eliminating chronic diseases is the deficiency and decline of five internal organs. Among them, the lung is the source of water. The main function of the lung is to promote the circulation of qi and blood, and it likes to moisten the heart, aversion to dryness, diabetes, and dryness-heat to turn fire into fire. If the lung is first invaded and lung yin is injured, the function of the lung is disordered, water and body fluid are not distributed, and the whole body is yin deficient. Research of Methodology for Classified Medical Records of Famous Physicians, Xiaoke, said: “Xiaoke and Xiaozhong are caused by spleen deficiency and kidney failure, water is not overcome by soil, and kidney fluid does not flow, which is the causing of disease.” Emphasize that spleen deficiency and renal failure are the main causes of diabetes. Modern studies have also proved that diabetes has a family hereditary tendency, so diabetes patients are mostly based on deficiency of kidney-qi, irregular waterways and insufficient fluid supply, which cause yin fluid deficiency and form diabetes. At the same time, diabetes patients prefer fat, sweet and spicy food for a

long time, while sweet from damp heat, which is causing the transportation and transformation of the spleen and stomach. In addition, long-term oral hypoglycemic drugs cause even more damage to the spleen and stomach, transportation and transformation disorders, and spleen deficiency causes qi deficiency due to a lack of energy. As stated in the “The Lingshujing, Wuwei,” “Without the intake of grain, the lack of qi will become more and more severe as time goes by” [3]. Spleen deficiency also causes water and grain to stay in the middle burner for a long time without digest, endogenous heat deposition, burning body fluid, and exhaustion of qi and yin, resulting in pathological products such as phlegm, blood stasis, turbid toxin, etc. Phlegm-dampness, blood stasis, turbid toxin, pooling up produces heat, causing further injury to yin and fluid, causing qi deficiency and yin depletion. The basic pathogenesis of diabetes heart disease is outlined in “The Lingshu, Benzang”. that is, if the heart is fragile, Shen and qi will become soft and fragile, and the heart fire is easy to move and damage the body, causing Xiaoke. “The Suwen, Jilun” holds that the blood vessels of the body belong to the heart. Physiologically, the qi of heart pushes blood to run in the pulse channel, and the circulation is endless. However, diabetes patients suffer from the deficient yin of spleen and kidney, which continuously consumes qi and injures yin, thus affecting the heart, causing the qi and yin of heart to consume and the heart pulse to be deprived of nourishment, which causing the diabetic cardiomyopathy.

2) Phlegm: Zhang Jingyue said that “all diseases of the five internalorgans can produce phlegm [4]”. Yao Jian says: “The spleen governs dampness and phlegm, and the spleen is invaded by dampness, thus losing the function of transportation and transformation. The fluids are immersed in yin and the blood is not regulated. All body fluids are stagnated and rising with qi, resulting in phlegm of cough and saliva, and phlegm of various diseases caused by long-term stagnation of the spleen”, which shows that the abnormal transportation and transformation of the spleen causes body fluids to stagnate and accumulate as phlegm turbidity. According to the “Essential Reading of Medical Professionals”, spleen and stomach are weak, pure and turbid are difficult to rise or fall, after accumulate over time, it will turn to phlegm. ” it is also stated in An Introduction to Medicine, ”Phlegm is produced by body fluid and blood, and rises and falls with the change of qi activity. If qi and blood are not combined, it will reverse the disease [5]”. “Lingshu, Jueqi” describes that body fluid and blood are the same as water and grain essence , if spleen and stomach injury, body fluid and blood will loss and block pulse channel, body fluid coagulates into phlegm and blood accumulates into blood stasis. Professor Liang thinks that all diseases are caused by phlegm, phlegm stagnates for a long time, heat is generated, lung and body fluid can be scorched in the upper part, stomach yin can be robbed in the middle part, kidney water can be consumed in the lower part, and heart, body, heart, qi and yin can be consumed in the longer time, meanwhile phlegm blocks the venation of heart and fu organs, obstruction causes pain, which leads to diabetic cardiomyopathy.

3) Blood Stasis: Synopsis of the Golden Chamber says: “If the patient is full of heat, his mouth is dry and thirsty, and his pulse has no heat, this shows yin-fu and blood stasis” [6]. This shows that blood stasis is closely related to diabetes. Chao

Yuan Fang said that “Blood moves with qi, and there is little stagnation”. “Mood depression, internal fire spontaneous combustion, causes serious diabetes”. Patients with long-term illness are prone to emotional disorders, liver dysfunction and qi stagnation, and blood stasis due to qi failure. Long term diabetes patients will have deficiency of both qi and Yin, Wang Qingren in Qing Dynasty believed that “the deficiency of primordial qi, the loss of blood vessels, and the deficiency of qi, which cannot push blood, causes blood stasis”. “Jingyue Quanshu” points out: “Human's qi and blood are just like the source, so if qi and blood are abundant, it will not stagnate, and if qi and blood are deficient, it will stagnate. [7] “Qi deficiency leads to weakness in blood, and blood stasis”. Deficiency of qi, inability to promote blood circulation, blood circulation will be slow, and blood stasis. “Reading Medical Essays Volume III” has a saying: “If body fluid is burned out by fire, blood will stagnate”. Yin deficiency and fire hyperactivity, internal burning of deficiency fire, lead to fluid deficiency due to fluid depletion, or yin deficiency and fluid deficiency due to insufficient blood source and insufficient blood vessels, resulting in blood stagnation or even congestion and blood stasis. Ye Tianshi pointed out: “Qi and blood are not carried out well, blood stasis and coagulation will occur if the disease lasts for a long time, and qi stagnation will cause blood stasis and coagulation” [8]. Diabetes mellitus persists repeatedly and is difficult to heal. It is easy to cause blood stasis and qi stagnation due to long-term diseases entering the collaterals, which indicates that blood stasis can also be caused by long-term diseases entering the collaterals. Blood stasis obstructs qi activity, causing body fluid not to be distributed, lung and stomach viscera to be moistened, or blood stasis to be accumulated, heat to be generated over time, dryness to be melted, body fluid to be injured, and the development of diabetes course to be accelerated. Professor Liang believes that blood stasis will not go away for a long time, new blood will not be generated, and the viscera and meridians cannot be nourished. The heart governs the arteries and veins and uses blood for its purpose. Blood stasis blocks the collaterals, the heart arteries and veins are not smooth, and the chest yang is not transported. This causes diabetic cardiomyopathy.

### **3. Zi, Tong, and Xiao Are the Three Major Therapeutic Principles**

1) Zi: The basic therapeutic principle of diabetic cardiomyopathy is to replenish qi and nourish yin. In the early stage of this disease, yin deficiency of lung, spleen and kidney are the main pathogenesis. Yin deficiency of kidney leads to endogenous fire of deficiency, which burns yin fluid, impairs qi and leads to the deficiency of both qi and yin. According to this, professor Liang believes that the treatment of this disease should be based on yin deficiency and yin nourishing method, which not only conforms to the pathogenesis of this disease, but also helps promote blood circulation and remove blood stasis. Just as the book “ Treatise on Blood Troubles” said: “If the water and yin of qi are insufficient, yang and qi will take advantage of yin and dry blood” it is believed that erroneous sweating can lead to blood deficiency [9]. As “Lingshu, Xieke” said: “Those who nourish qi secrete body fluid, inject it into the pulse channels, and turn it into blood”. This shows that the method of nourishing yin can supplement body fluid, and the body fluid and blood are of the

same origin, thus achieving the effect of strong blood and smooth pulse channels. the book “ Treatise on Blood Troubles” said: “Yin deficiency of spleen, cause the indigestion of water and grain. Just like, when cooking in a kettle, if there is no fire at the bottom of the kettle, the food can’t be cooked, if there is no water in the kettle, the food can’t be cooked either”. It is emphasized that yin deficiency of spleen causes distribution dysfunction and produces phlegm due to dampness, so nourishing yin method is also helpful to eliminate phlegm and dampness. Professor Liang Junzhao is good at applying water control to treat blood diseases. He believes that water should be transferred first for all blood diseases. Therefore, the method of nourishing yin not only meets the requirements of root causes, but also contains the meaning of preventing blood stasis caused by yin deficiency.

2) Tong: “Shuo Wen Jie Zi” says: “Tong, means arrival.”The Book of Changes, Xici”, says: “Endless communications means Tong”. In Synopsis of the Golden Chamber, it is said that “if the five zang-organs and yuan are unimpeded, then people are at peace”. Patients with diabetic cardiomyopathy are mostly those with long-term illness or the elderly. They suffer from lost of nourishment, weakness of spleen and stomach, loss of transportation and transformation, endogenous phlegm and blood stasis, and internal resistance from turbid toxin, while the chest is the mansion of the ancestral qi, and it needs yang qi to “breathing through the heart and pulse”, therefore, in order to cure Yin and cold evils, such as phlegm dampness, cold evils, blood stasis, etc., Yang Qi must be used to dredge the chest. Professor Liang used yang-warming and kidney-strengthening drugs in his clinical practice, so that the patient’s body could be nourished. At the same time, he added caulis spatholobi, caulis Ionicerae and other rattan drugs along with the recipe. caulis spatholobi is used for chronic diseases and blood deficiency, and caulis Ionicerae is selected for stasis and heat resistance. With the aid of rattan drugs, the effect of “dredging channels and entering collaterals” in “Collection of Materia Medica” can be achieved, and the venation can be all connected. He is also good at treating both symptoms and signs of patients and applying the method of purgation. If stool is obstructed, he must first “retain and attack” and treat it with the method of purgation. Representative drugs include Magnolia Officinalis, Fructus Aurantii Immaturus and Aloe. If you see poor appetite, you must use food to promote digestion and stimulate appetite. The representative drugs are malt, hawthorn, etc.

3) Xiao: “Medical Insights” said: “Xiao, means to remove the obstruction.” [10]. The Xiao method refers to the treatment method that uses various drugs to make the body qi, blood, phlegm, blood stasis, food, water, insects and other visible accumulation, and the invisible accumulation and stagnation gradually disappear and slowly disperse. Professor Liang, according to the principle of “removing blood stasis by removing old ones” in Huangdi Neijing, respected the view of “removing blood stasis by removing new blood” in “ Treatise on Blood Troubles”. Combining with the characteristics of diabetes cardiomyopathy patients with chronic diseases and multiple blood stasis, he believed that using blood-activating and blood-stasis-removing products can not only remove blood stasis, unblock blood vessels, but also help to generate new blood. In clinical practice, he preferred rhubarb products to promote blood circulation and remove blood stasis, renew blood, and angelica,

cortex moutan, radix paeoniae rubra and other drugs to promote blood circulation and remove blood stasis without damaging yin and consuming qi, thus preventing evil invasion. "The True Story of Medicine, Qi and Blood" said: "Blood can not move without Qi". In "Stupid Child of Medical", it is believed that wind medicine can penetrate the twelve meridians. Therefore, Professor Liang combines qi-regulating drugs and wind-type drugs in clinical practice. He often said that wind is the long-term cause of all diseases, and is often combined with phlegm and blood stasis and toxicity. If the wind goes away, blood will flow. Therefore, the method of treating blood first is to treat wind. The application of wind medicine can make the medicine achieve the usual effects of dispelling stagnation and resolving stagnation, promoting the circulation of qi, warming and dredging yang and blood flow. However, excessive dryness and yin damage caused by too much wind medicine must be avoided.

#### 4. Conclusion

A 42-year-old patient, Jiang, female, complained of "chest tightness and shortness of breath with chest pain for 2 years and aggravation for 1 month" in July 2018. She had a 12-year history of diabetes mellitus, 6 years of insulin subcutaneous injection and 5 years of hypertension. She took nifedipine sustained-release tablets, blood pressure control effect is average, found no food and drug allergy, denied the history of infectious diseases such as hepatitis and tuberculosis, denied the history of trauma and surgery, and denied the bad habits of smoking and drinking. Current symptoms: chest tightness and discomfort accompanied by shortness of breath, chest pain, mainly in the precordial region, needle-like pain, fixed position, lasting for several minutes at a time. Occasional abdominal distension, slight swelling of both lower limbs, Ordinary mental state, private complaint, occasional lassitude, common appetite, poor rest at night, and normal defecation. Lip is dark purple, tongue is dim, tongue coating is white and greasy, with sublingual vein engorgement and pulse string is smooth.

Physical examination: blood pressure: 148/95mmHg, heart rate: 82 beats/minute, blood sugar: 7.9 mmol/L. Electrocardiogram showed sinus rhythm was generally normal. The results of cardiac Doppler showed that the left atrium increased and ventricular diastolic function decreased. Professor Liang combined the fourth diagnostic data of traditional Chinese medicine with the auxiliary examination results of western medicine, and the diagnosis of traditional Chinese medicine was thoracic obstruction and diabetes. Western medicine diagnosis: diabetic cardiomyopathy, type 2 diabetes, hypertension grade 2. Syndrome Differentiation: Phlegm and Blood Stasis Combined with Qi Deficiency Syndrome. The therapeutic principles include promoting blood circulation, eliminating phlegm, invigorating qi and dredging meridians.

Prescription of Ling Gui Zhu Gan Tang and Xue Fu Zhu Yu Tang with added or subtracted. The medicine composition comprises 15g of tuckahoe, 15g of largehead atractylodes rhizome, 10g of cassia twig, 12g of bitter orange, 10g of Bupleurum root, 6g of platycodon grandiflorum, 10g of ligusticum wallichii, 15g of angelica,

10g of *magnolia officinalis*, 15g of *caulis polygoni multiflori*, 10g of *Pinellia ternate* and 6g of liquorice. Usage:Decoct total of 7 doses with 400ml of water, take 1/2 dose with warm temperature in every morning and evening.

Second diagnosis: the patient complained of relief of chest tightness, chest pain, lower limb edema and other symptoms, occasional shortness of breath, abdominal distension, tiredness and weakness, common rest at night, normal food intake, normal defecation and urination. Lips are light red, tongue is dim, coating is thin and white, pulse string is smooth. With the same diagnosis, the prescription has not changed. 20g of astragalus root, 10g of areca peel and 30g of suberect *spatholobus* stem are added to it, followed by two weeks of administration. After follow-up, the patient's private complaint was obviously relieved, and was instructed to take it for another week to consolidate the curative effect. At the same time, instruct patients to pay attention to diet structure, have frequent small meals, exercise healthily to control blood sugar, regularly detect changes in blood pressure and blood sugar, and see a doctor as soon as possible in case of discomfort.

Experience: The patient is a middle-aged woman with a history of diabetes for 12 years and the blood sugar control effect is average. Professor Liang combined medical history and symptoms, traditional Chinese medicine physical examination and western medicine auxiliary examination results, western medicine diagnosis: diabetic cardiomyopathy, traditional Chinese medicine diagnosis: diabetes heart disease. The patient suffered from diabetes for a long time, with deficiency, phlegm, blood stasis and turbid toxin coexisting, while the heart and pulse were blocked, and the blockage caused pain, which resulted in diabetes heart disease. Phlegm-dampness in the interior leads to edema of both lower limbs, abdominal distension and fullness in the epigastric region, shortness of breath due to qi deficiency, and occasional tiredness and weakness. Dark purple lips, dim tongue, white and greasy coating, sublingual vein engorgement and smooth pulse are all symptoms of phlegm and blood stasis combined with qi deficiency. "Materia Medica Seeking Truth" also says: "The spleen suffers from wet, take bitter food to make it dry; the spleen wants to rest, take sweet food to slow it down. *Atractylodes macrocephala* Koidz tastes bitter but sweet, which can eliminate dampness and replenish spleen, and restore the function of relieving spleen and promoting fluid production "[11]. *Poria cocos* is an essential drug for moving phlegm and water. phlegm retention, swelling and damp arthralgia all depend on *atractylodes* rhizome. *Poria cocos* combined with *Atractylodes macrocephala* can benefit spleen and expel water. *Cassia* twig can warm water and drink, activate yang and transform qi, if combined with *poria cocos*, it can benefit bladder and promote qi transformation. "Medicinal Fu" said: "Dehumidification, eliminating phlegm, harmonizing the qi activity of spleen and stomach, treat phlegm Jue and headache diseases, are *Pinellia* drugs' specialty". *Fructus Aurantii* and *Bupleuri Radix* regulate qi activity, and Chongqing Tang Essay contains "*Platycodon grandiflorum*, which opens the junction of lung qi, relieves depression of heart qi, it's a special medicine for upper-jiao. *Caulis Polygoni Multiflori* can not only dredge channels and collaterals, but also nourish heart and tranquilize mind. *Ligusticum wallichii* is the qi drug in blood. *Glycyrrhiza uralensis* Fisch Helps combine Various Drugs.

Source: Xi 'an Famous Traditional Chinese Medicine Studio Construction Project of Shaanxi Administration of Traditional Chinese Medicine (2019034).

### References

- [1] Dong Li, Yang Sijin, Snow White, Du Yong, Shi Jianjun (2020). Discussion on “Diabetes Heart Disease” Understanding Diabetic Cardiomyopathy [J]. Journal of Tianjin University of Traditional Chinese Medicine, vol.39, no.1, pp.117-120.
- [2] Wang Ranran, Zheng Ruoyun, He Juan (2019). Speculation on Eliminating Illness in Huangdi Neijing [J]. Chinese Journal of Traditional Chinese Medicine, vol.34, no.11, pp.5351-5354.
- [3] Zhang Jiebin(2006). Jingyue Quanshu [M]. 1st Edition. Taiyuan: Shanxi Science and Technology Press, pp.355-356.
- [4] Xue Zehui(2018). Theoretical Study on Nourishing Yin and Eliminating Phlegm [D]. Shandong University of Traditional Chinese Medicine, pp.25-26
- [5] Zhang Jiebin(2007). Jingyue Quanshu [M]. Beijing: People's Health Publishing House, pp.399-403.
- [6] Ye Tianshi(1995). Clinical Guidance Medical Records [M]. Hua Xiuyun, Compilation. Beijing: Huaxia Publishing House, pp.313.
- [7] Tang Zonghai(1990). Treatise on Blood Troubles [M]. Beijing: People's Health Publishing House, pp.5.
- [8] Qi Fangzhou, Mao Zhujun, Chen Shenghua, Chai Kefu(2014). On the application of elimination method in the treatment of diabetes and its complications [J]. Journal of traditional chinese medicine, vol.55, no.10, pp.896-897.
- [9] Huang Gong Xiu(1959). Materia Medica Seeking Truth [M]. Shanghai: Shanghai Science and Technology, pp.7.