

# Treating diabetic peripheral neuropathy from "Qi"

Jiaru Xu<sup>1,a</sup>, Yuhong Duan<sup>2,b,\*</sup>

<sup>1</sup>Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712046, China

<sup>2</sup>Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712000, China  
<sup>a</sup>1003109760@qq.com, <sup>b</sup>56782039@qq.com

\*Corresponding author

**Abstract:** Diabetic Peripheral Neuropathy (DPN) refers to a series of clinical symptoms resulting from the symptom-complex of excessive eating for a long time, a deficiency of qi, blood and body fluids, and blocked body channels. According to the theories of traditional Chinese medicine, the qi, blood and body fluids comes from the same source. Qi can not only generate body fluids, but can also promote the activity of body fluids and circulation of blood. Meanwhile, qi is also the fundamental substance constituting and maintaining the living activities of a human body. Therefore, treatment of DPN should focus on boosting qi, nourishing yin, as well as activating qi and promoting the circulation of blood. Clinically, treatment and diagnosis of DPN need to be considered in combination with other symptoms, with comprehensive analysis conducted on the basis of the four diagnostic examination methods.

**Keywords:** Diabetic peripheral neuropathy; Diabetes arthralgia; Clinical experience

## 1. Preface

The prevalence of diabetes in China is still rising <sup>[1]</sup>, reaching 11.2% from 2015 to 2017, with large differences among different ethnic groups and among different regions.(Table 1, Figure 1, Table 2) Diabetes awareness (36.5%), treatment (32.2%) and control rate (49.2%) improved, but remained at a low level. T2DM accounted for more than 90% of the diabetic population.

Table 1: Summary of 8 national epidemiological surveys of diabetes mellitus in China

The survey year	DC	Number of respondents (ten thousand)	Age (year)	Diabetes prevalence (%)	The IGT prevalence (%)	screening echnique
1980 <sup>a</sup>	Lanzhou standard	30	The national crowd	0.67	No data	glucose in urine+Steamed bread meal 2hPG Screening high-risk groups
1986	WHO 1985	10	25-64	1.04	0.68	Steamed bread meal 2hPG Screening high-risk groups
1994	WHO 1985	21	25-64	2.51	3.20	Steamed bread meal 2hPG Screening high-risk groups
2002	WHO 1999	10	≥18	City 4.5 village 1.8	1.6(The IFG was 2.7)	High-risk groups were screened for fasting blood glucose
From 2007 to 2008	WHO 1999	4.6	≥20	9.7	15.5 <sup>c</sup>	OGTT
2010	WHO 1999	10	≥18	9.7	No data	OGTT
2013 <sup>b</sup>	WHO 1999	17	≥18	10.4	No data	OGTT
From 2015 to 2017 <sup>b</sup>	WHO 1999	7.6	≥18	11.2	No data	OGTT

Note: WHO is the World Health Organization; IGT is reduced glucose tolerance; IFG is impaired fasting blood glucose; 2hPG was 2h postprandial blood glucose; and OGTT is oral glucose tolerance test. aThe diagnostic criteria were abdominal plasma blood glucose≥130 mg/dl (1 mmol/L=18 mg/dl) and (or) 2hPG≥200 mg/dl and (OR) Three points on the OGTT curve exceeded the diagnostic criteria [125 mg/dl for 0 min, 190 mg/dl for 30 min, 180 mg/dl for 60 min, 140 mg/dl for 120 min, 125 mg/dl for 180 min (1 point for 30 min or 60 min). Blood glucose was measured by the o-toluidine method, Glucose is 100g; bThe survey data besides the Han Chinese also include other ethnic minority groups; cPrediabetes includes either IFG, IGT or both.

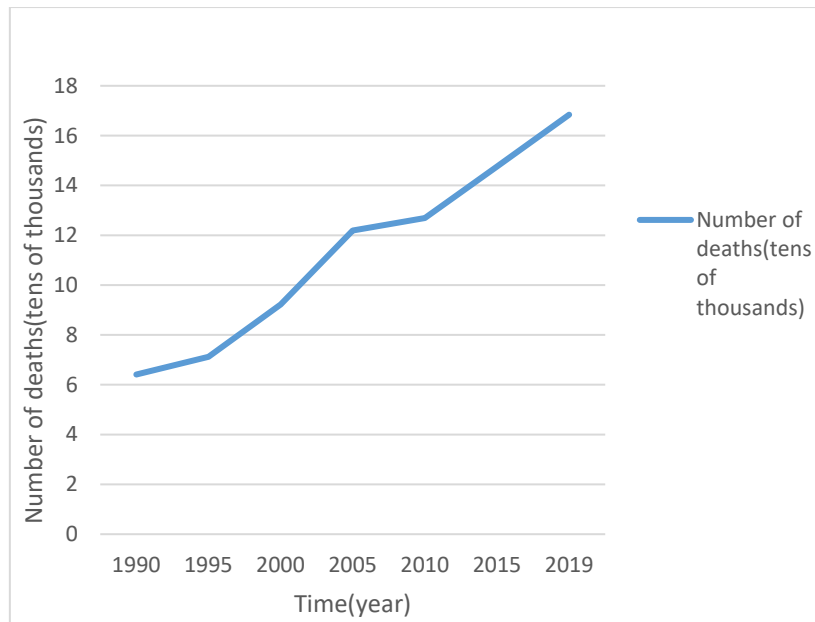


Figure 1: T2DM, number of deaths in China from 1990 to 2019

Table 2: Prevalence of T2DM, incidence, mortality and DALY rates in China in 1990 and 2019

Group	Prevalence rate		Morbidity		Death rate		DALY rate	
	1990	2019	1990	2019	1990	2019	1990	2019
15~49 years age								
Male	2.11	4.22	184.08	300.58	0.79	1.19	159.77	315.94
Female	1.62	2.95	155.49	243.99	0.63	0.58	123.45	200.97
50~69 years age								
Male	10.13	12.52	371.07	354.89	16.07	15.85	1216.75	1371.50
Female	11.04	11.97	506.01	465.87	23.93	14.72	1476.06	1269.09
≥70 years age								
Male	14.87	17.50	301.71	324.45	67.18	100.53	2218.96	2788.95
Female	15.76	16.25	196.02	166.76	80.98	95.45	2437.64	2531.28
Total								
Male	2.92	6.63	160.91	265.66	4.37	11.48	309.59	699.65
Female	2.94	6.01	160.54	260.89	6.53	12.22	353.09	649.74

Diabetic peripheral neuropathy (DPN) is the most common complication in patients with diabetes and is characterized by pain, paresthesia, and loss of sensation, leading to an increased risk of burns, injuries, and foot ulcers. [2-3] At present, the conventional treatment methods of Western medicine for DPN include blood glucose control, microcirculation improvement, anti-oxidative stress, inhibition of aldose reductase activity, neural nutrition, etc. [4] TCM treatment methods mainly include prescription therapy, acupuncture, traditional Chinese medicine fumigation, acupoint injection, etc. [5] This article mainly discusses the traditional Chinese medicine treatment of DPN, combined with Director Duan Yuhong's many years of clinical experience in traditional Chinese medicine, from the "qi" treatment of diabetic peripheral neuropathy.

## 2. Etiology and pathogenesis of traditional Chinese medicine

The pathogenesis of diabetes is always the primary deficiency and the real.

"Huangdi Neijing · Lingshu" said, "If Wei Qi is not good, it is numb"; "The Huangdi Neijing · Su Q"cloud" camp Qi deficiency is not benevolent, Qi deficiency is not necessary"; "All the pains are solid, all the itching are empty"; "Danxi treatment heart" pointed out that "hemp is Qi deficiency, wood is wet phlegm dead blood"; "Class syndrome treatment" in the point out that "numbness, camp and health lag and not the disease"; "Danxi heart method" quenching thirst recorded in the article, "the heat falls under, the kidney is weak, the legs and knees are thin, and the joints are painful".

Director Duan Yuhong believes that patients with diabetic peripheral neuropathy due to chronic heat

burn body fluid, gas depletion hurt Yin, stasis vein, eventually lead to Qi, blood and body fluid deficiency, muscle loss and numbness, pain, itching and other symptoms.

### 3. Diagnostic criteria

Meet the diagnostic criteria of Expert Consensus on Diagnosis and Treatment of Diabetic Neuropathy (2021 Edition) : (1) have a clear history of diabetes; (2) neuropathy occurring at or after the diagnosis of diabetes; (3) Clinical symptoms of neuropathy, such as pain, numbness, paresthesia, etc, abnormal in any one of the 5 tests (ankle reflex, vibration, pressure, acupuncture pain, temperature); If there are no clinical symptoms, abnormalities in any two of the five tests can be diagnosed. (4) Neuropathy caused by other reasons is excluded. If the diagnosis cannot be confirmed based on the above tests, a differential diagnosis is needed and neuroelectrophysiological examination can be performed <sup>[4]</sup>.(Figure 2)

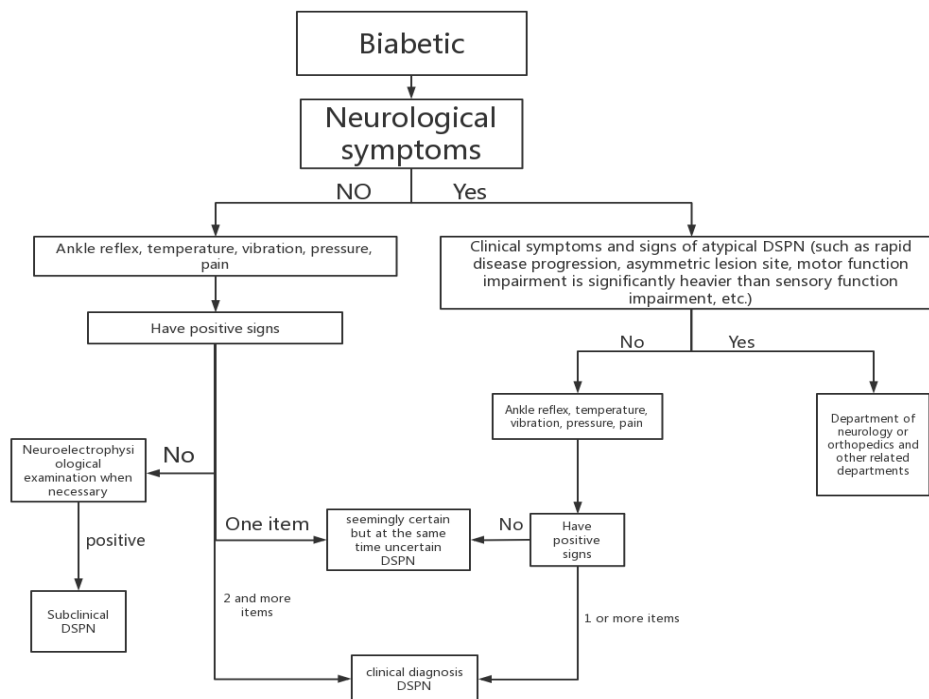


Figure 2: The diagnostic flow chart of the DSPN

### 4. Principles of treatment

The general treatment principle of diabetic peripheral neuropathy is to nourish Qi and Yin, Qi and blood circulation and collaterals." Huangdi Neijing · Lingshu"recorded in"Yingwei Qi is also, blood is also air, so blood and gas, the same name. Therefore, the blood taker has no sweat, and the sweat taker has no blood". It shows that Qi and blood is homologous, and blood and blood are homologous." The True Biography of Medicine" recorded" Qi is the main, blood is auxiliary, Qi is heavy, blood is light, so the blood is insufficient, can gradually grow, if the qi does not stand, then die". Emphasize the two deficiency of qi and blood, first treat the qi and then treat the blood." On the Source of Various Diseases" recorded that "blood in the body, with Qi. Often do not stop accumulation". The Qing Dynasty "Shen Shi Zunsheng" said, Qi depends on blood, blood with the week to stay, blood coagulation is coagulation." It shows that qi is blood, and qi stagnation is blood stasis. "Huangdi's Neijing · Lingshu" says, "Those who cultivates qi will inject their body fluid into the veins and turn it into blood." It shows that qi can produce blood.

Medical Mirror of Gu Songyuan pointed out: "Numbness...", also because of Qi deficiency, because of less blood, because of Qi stagnation, because of dead blood, because of phlegm and dampness, each has the evidence can be based on, detailed examination of the injection, ordinary will not be mistaken". Qi deficiency and Qi stagnation can lead to poor blood flow, phlegm and blood stasis veins. The

treatment is usually based on qi replenishment and Qi action. Phlegm and blood stasis can also cause or aggravate vein stasis, and the treatment is usually based on activating blood circulation. Because the pathogenesis of diabetic peripheral neuropathy is essentially deficiency with solid, the vascular stasis in this disease is mainly caused by deficiency causing blood stasis, so the treatment should be based on "replenishing qi".

## 5. Treat from Qi

Duan Yuhong, director of the treatment of diabetic peripheral neuropathy, usually takes Huangqi Guizhi Wuwu decoction as the main addition and subtraction, modification according to symptoms, as shown in Table 3.

Table 3: Add and subtract with the disease

The spleen deficiency is heavier	Add dangshen, Atractylodes tylo, poria cocos, yam, etc
Blood stasis and pain are more severe	Add miltiorrhiza, Angelica, chicken blood vine, wood, turmeric, winter vine, etc
Heavy Yin deficiency	Add sand ginseng, ophiopogon, raw land, etc
Many sweat	Add floating wheat, schisandra chinensis, etc
Insomnia is more serious	Add sour jujube kernel

Astragalus has the functions of replenishing Qi and raising Yang, invigorating jin and nourishing blood, and promoting stagnation and Tongbi. It can treat internal heat and quench thirst, hemiplegia and numbness caused by Qi deficiency and blood stagnation. It is the king medicine. Modern studies have shown that astragalus has the functions of enhancing immunity, anti-tumor, improving the symptoms of diabetes and its complications, protecting cardiovascular and cerebrovascular, regulating blood pressure biaxially, protecting myocardial, promoting angiogenesis, protecting viscera such as liver, kidney and lung, and protecting damaged nerves [6].

Cassia branch has the function of sweating muscle, warming meridians, helping Yang and Qi. Studies has shown that cassia twig contains cinnamaldehyde, cinnamyl alcohol, cinnamic acid, protocatechuic acid and other chemical components, which have antiviral, antibacterial, hypoglycemic, antihypertensive, vasodilatory, neuroprotective effects [7].

Stir-fried paeony has the effects of nourishing blood and regulating menstrual rhythm, collecting Yin and antiperspirant, softening liver and relieving pain, etc. And can treat Yin and blood deficiency and muscle loss, causing hand and foot clonus pain. Modern studies has shown that the chemical components of paeonia lactiflora are mainly volatile oils, monoterpenoid, triterpenoids and flavonoids, which have effects on spasmolysis, analgesia, anti-convulsion, anti-inflammation, antibacterial, immune regulation, vasodilation and anti-platelet agglutination [8].

Sappanwood has the functions of promoting blood circulation, removing swelling and relieving pain, which is a common drug for the treatment of stasis and tingling pain. The chemical composition of hematoxylin mainly includes protohematoxylin, braziloxylin, isoflavone, hematoxylone and other components. In addition, it also contains dibenzenes and other components, such as sterols, volatile oils, organic acids and amino acids. Sappanwood and its chemical components have anti-inflammatory, anti-tumor, immunosuppressive, antibacterial, vasodilatin, antioxidant, sedative and other effects on diabetes intervention [9].

## 6. Treat from Qi

The patient surnamed Wang, male, 50 years old, was diagnosed for the first time on November 1st, 2021. Chief complaint: History of diabetes for 2 years. Two years ago, the physical examination found that the blood glucose was elevated, and the drugs such as metformin were used, which resulted in poor blood glucose control. Symptoms: dry mouth, excessive drinking, fatigue, numbness of hands and feet. Dark red tongue, little moss, heavy pulse. Physical examination: lower extremity skin temperature decreased. Western Medicine diagnosis: Type 2 diabetes diabetic peripheral neuropathy. TCM diagnosis: Quench thirst. Syndrome differentiation: Qi deficiency and blood stasis. Treatment: Qi and Yin, Qi and blood circulation and collateral. Prescription: Astragalus 30g, cassia twig 10g, sappanwood 10g, turmeric 10g, Angelica pubescent 10g, achyranthus radix 30g, fried white peony root 30g, dendrobium 10g, radix glehniae 30g, caulis spatholobi 30g, honeysuckle vine 30g, salvia miltiorrhiza

30g, licorice 3g. 7 doses, one dose per day, decocted in water, warm in the morning and evening.

Second diagnosis (November 08, 2021): The patient's dry mouth, polydipsia, numbness of hands and feet were significantly relieved, and he felt full and uncomfortable stomach distension and dry stool in recent days. Dark red tongue, little moss, pulse string. Prescription: Add 10g of angelica and 15g of Fructus aurantii. 7 doses, one dose per day, decocted in water, warm in the morning and evening.

Third diagnosis (November 18, 2021): The patient's symptoms were basically relieved. Prescription: 7 doses of two prescription, decocting method are the same as before. The patient was instructed to eat and exercise, avoid wind and cold, keep emotions clear, review regularly and follow up for discomfort.

According to the patient's symptoms such as thirst, polydipsia, fatigue, numbness of hands and feet, combined with tongue and pulse, the syndrome differentiation was Qi deficiency and blood stasis. Qi tonic medicine, Yin tonic medicine, blood activating medicine and vine medicine were used to treat symptoms, and both specimens were taken into account. In the second diagnosis, the symptoms of the patient were significantly relieved, and the epigastric distension was uncomfortable. Therefore, Fructus aurantii was added for qi to eliminate distension, angelica to replenish blood and promote blood circulation, and moisten bowel and defecation. The symptoms basically disappeared during the third diagnosis, so the original prescription was used to consolidate the curative effect.

## 7. Summary

Modern research has shown that symptoms of nerve damage may include: numbness, tingling, or pain in the toes, feet, legs, hands, arms and fingers, indigestion, nausea, or vomiting, diarrhea or constipation, dizziness or fainting due to a drop in blood pressure after standing for long periods of time, urination problems, erectile dysfunction in men or vaginal dryness in women. DPN starts at the toe and gradually moves to the proximal end. Once it is well established in the lower extremities, it affects the upper extremities, and sensory loss follows the typical "gloves and socks" distribution pattern<sup>[10]</sup>.

"The ancient and modern medical guide" points out: "numbness, because of rheumatic fever in blood points, Yin in Yang way doesn't work, also have phlegmy in blood points, its disease leads to body numb and itch, blood does not honor on muscle joint, cure to ginseng and astragalus can help Yang, with angelica to line the vagina, rhizoma atracylodos, large-headed atracylodes, Licorice, Yellow cedar to get rid of the heat and humidity, Bupleurum, Cohosh, Peony to raise it, Erchen soup is added for phlegm, treatment should be flexible". The prescription uses ginseng and astragalus to supplement Qi and Yang, Angelica to replenish blood and promote blood circulation, rhizoma atracylodos, large-headed atracylodes, licorice, yellow cedar and so on to dehumidify, add bupleurum, cohosh, peony to raise Yang Qi, Erchen soup is added for phlegm.

In conclusion, diabetic peripheral neuropathy is characterized by phlegm dampness, blood stasis, qi stagnation, and Qi deficiency. The treatment is mainly to replenish Qi and nourish Yin, and also to remove phlegm and dampness, replenish blood and promote blood circulation, Qi and remove blood stasis.

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