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Experience in Treating Atherosclerosis Based on Professor Guo Shuwen's Theory of "Qi Deficiency and Turbid Stasis"

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Abstract: Atherosclerosis is the pathological basis leading to various chronic internal diseases, such as peripheral atherosclerosis, coronary heart disease, cerebral infarction, etc. Professor Guo Shuwen, based on the pathophysiological characteristics of atherosclerosis and plaque formation, believes that the gradual decline in physical function and metabolic function in middle-aged and elderly people leads to the formation of pathological products, which in turn cause the occurrence and development of diseases. Therefore, clinical practice emphasizes the key pathological links of "gradual deficiency" or "intrinsic deficiency". Qi deficiency is the root cause of the formation of pathological products such as turbidity, phlegm, blood stasis, and toxicity. That is, Qi deficiency does not circulate, turbid phlegm is diffuse, and blood stasis is the main pathological characteristics. The theory of "Qi deficiency, turbidity, and blood stasis" is proposed to treat atherosclerosis. Clinically, the method of nourishing Qi to resolve turbidity and promoting blood circulation to clear the meridians is applied, and the therapeutic effect is satisfactory.

Keywords: Atherosclerosis; Guo Shuwen; Experience of renowned veteran Chinese medicine practitioners; Qi deficiency and turbid stasis

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1. Introduction

Atherosclerosis (AS) is the pathological basis for a variety of chronic internal medical diseases, including carotid atherosclerosis, lower extremity atherosclerosis/lower extremity atherosclerotic occlusive disease/lower extremity atherosclerotic gangrene, coronary heart disease, ischemic cardiomyopathy, cerebral infarction, among others. Modern medicine posits that atherosclerosis is a systemic disease characterized by degenerative and proliferative lesions of the arterial intima, mediated by lipid metabolism disorders and chronic inflammatory responses [1]. The initiating factors include endothelial dysfunction and lipid infiltration. Risk factors for atherosclerosis encompass hypertension, hyperlipidemia, diabetes, smoking, obesity, etc.

Key events involve increased permeability of damaged endothelium, allowing low-density lipoproteins (LDL) in the blood to enter and accumulate beneath the arterial intima, where they are oxidatively modified into ox-LDL, a potent pro-inflammatory substance. The core process involves inflammatory responses and plaque formation, where ox-LDL attracts monocytes into the intima, differentiating them into macrophages that engulf lipids and transform into foam cells, forming early lesions known as fatty streaks. During the plaque development phase, smooth muscle cells migrate and proliferate, synthesizing collagen fibers that, together with the lipid core and necrotic cell debris, constitute mature fibrous atherosclerotic plaques. Plaques can be classified as stable or unstable. Stable plaques have a thick fibrous cap, a small lipid core, and mild inflammation; unstable plaques have a thin fibrous cap, a large lipid core, active inflammation, and significant macrophage infiltration, making them prone to rupture or erosion, leading to secondary platelet aggregation, thrombosis, and acute cardiovascular and cerebrovascular events such as myocardial infarction and cerebral infarction. Currently, therapeutic targets for atherosclerosis primarily focus on controlling risk factors, including blood pressure reduction, lipid regulation, glycemic control, anti-inflammatory stabilization of plaques, antiplatelet therapy, and vascular reconstruction.

Professor Guo emphasizes the importance of addressing the key pathological link of "gradual deficiency" or "fundamental deficiency" in atherosclerosis, proposing that Qi deficiency is the root cause of pathological products such as turbidity, phlegm, blood stasis, and toxins, with the primary pathological characteristics being Qi deficiency failing to disperse, turbid phlegm pervading, and blood stasis obstructing the vessels. He advocates for the "Qi-Supplementing and Turbidity-Resolving, Blood-Activating and Meridian-Unblocking" method as the primary treatment for this condition, achieving satisfactory therapeutic effects.

2. Treating atherosclerosis from the perspective of the spleen and stomach

Classic ancient TCM texts do not mention the modern term "atherosclerosis", but descriptions of its clinical manifestations such as chest pain, dizziness, and limb numbness, as well as its pathological essence such as sluggish pulse channels and obstruction, are scattered among records of conditions like "chest obstruction", "true heart pain", "pulse obstruction", "vertigo", "phlegm retention" and "blood stasis". The core understanding of its syndrome differentiation and treatment can be summarized as follows:

2.1. Core etiology and pathogenesis of atherosclerosis

2.1.1. Dietary and labor-induced injury to the spleen and stomach, leading to internal generation of turbid phlegm

"Su Wen · Jing Mai Bie Lun" states, "Food Qi enters the stomach, turbid Qi goes to the heart, and the essence permeates the vessels", indicating that dietary essence can transform into nutrient blood, but excessive rich and greasy foods generate "turbid Qi", akin to modern lipid metabolism disorder products. "Dan Xi Xin Fa" explicitly proposes, "Phlegm entwined with blood stasis forms nests", recognizing that turbid phlegm and blood stasis intertwine to form tangible pathogenic factors, similar to modern medical plaques, obstructing the channels.

2.1.2. Emotional internal injury, leading to Qi stagnation and blood stasis

"Su Wen · Ju Tong Lun" states, "All diseases arise from Qi". Prolonged worry, anger, and frustration lead to Qi stagnation, which in turn causes blood stasis, obstructing the heart vessels. This aligns with "Zheng Zhi

Zhun Sheng", which says, "Depression and anger injure the liver, causing Qi reversal and blood stasis".

2.1.3. Aging and decline, leading to kidney essence deficiency

"Ling Shu · Ying Wei Sheng Hui" states, "The elderly have declining Qi and blood, with withered muscles and sluggish channels", indicating that aging leads to reduced Qi and blood, making the channels sluggish and providing an internal basis for disease. The kidney is the root of primordial Qi; kidney deficiency leads to insufficient Qi, resulting in weak propulsion and easy formation of phlegm and blood stasis.

2.1.4. Invasion of cold pathogens, leading to stagnant blood

"Su Wen · Ju Tong Lun" states, "Cold Qi enters the channels, causing delay and stagnation...lodging in the vessels obstructs Qi flow". Cold's contracting and stagnating nature can induce or exacerbate vessel obstruction and pain, explaining why such conditions often worsen in cold seasons or after exposure to cold.

2.2. Therapeutic principles for atherosclerosis

Although classic ancient texts do not have dedicated sections, they establish therapeutic principles and herbal formulas targeting the core pathogenesis, deficiency, phlegm, blood stasis, and stagnation, laying the framework for later differentiation and treatment. Based on in-depth study and analysis of classic TCM texts, Professor Guo Shuwen proposes the "Qi Deficiency, Turbidity and Blood Stasis" theory, establishing the "Qi-Supplementing and Turbidity-Resolving, Blood-Activating and Meridian-Unblocking" method for treating this condition.

2.2.1. General therapeutic principles

Combine tonification and dredging, with dredging as the priority.

2.2.2. "Dredging" method

Targets tangible pathogenic factors such as phlegm, blood stasis, and Qi stagnation, including blood-activating and stasis-resolving, phlegm-resolving and turbidity-eliminating, and Qi-moving and channel-unblocking approaches. As stated in "Su Wen · Zhi Zhen Yao Da Lun", "Dredge the blood and Qi to make them harmonious and unobstructed".

2.2.3. "Tonification" method

Targets fundamental deficiencies such as Qi deficiency, yang deficiency, and kidney deficiency, focusing on Qi-supplementing and yang-warming, kidney-tonifying and primordial Qi-nourishing approaches.

2.3. Herbal formula composition ideas

Professor Guo Shuwen's self-created "Lipid-Regulating and Meridian-Unblocking Formula" consists of: Raw Astragalus 30 g, Angelica Sinensis 15 g, Raw Hawthorn 20 g, Alisma 12 g, Cassia Seed 30 g, Earthworm 15 g, Notoginseng Powder 6 g. In this formula, Astragalus and Angelica Sinensis, drawing from Angelica Blood-Supplementing Decoction, supplement Qi to generate blood, addressing fundamental deficiency and promoting new blood while resolving stasis; Angelica Sinensis enters the heart, liver, and spleen channels, supplementing and activating blood, serving as a sovereign medicine for blood supplementation, and when paired with Astragalus to supplement Qi and strengthen the spleen, it prioritizes strengthening the body

before eliminating pathogens. Stagnant blood leads to blood stasis, which over time obstructs the channels, generating turbid phlegm and blood stasis. Ye Gui said, "I often use swift-moving insects and ants to promote blood circulation, making ascending substances rise and descending substances fall, preventing blood stagnation and promoting Qi circulation", hence Earthworm is used to unblock the channels and guide other herbs to their respective channels; Notoginseng Powder is used to activate blood and resolve stasis, unblock the channels and promote blood circulation, while Hawthorn promotes blood and Qi circulation; Alisma and Cassia Seed, which eliminate dampness and resolve phlegm, activate blood and resolve stasis, work together to achieve the effects of supplementing Qi, resolving turbidity, activating blood, and unblocking the channels.

Modern pharmacological studies have confirmed that Astragalus polysaccharides can significantly reduce serum levels of total cholesterol, malondialdehyde, triglycerides, and endothelin, alleviating endothelin-induced vascular damage [2]. The active components of Angelica Sinensis can increase the absorption of intracellular oxygen free radicals, inhibit platelet aggregation and vascular smooth muscle proliferation [3]. Angelica Blood-Supplementing Decoction, originating from Li Gao's "Nei Wai Shang Bian Huo Lun" and composed of Astragalus and Angelica Sinensis, has been found through network pharmacology and molecular docking studies [4] that its core active components such as quercetin, kaempferol, and isorhamnetin can regulate pathways related to inflammation, oxidative stress, and lipid metabolism by acting on relevant hub targets such as TNF, IL1B, IL6, and AKT1, thereby achieving therapeutic effects on atherosclerosis. The active components of Earthworm can reduce blood lipids and enhance cholesterol conversion and excretion [5]. The active component of Notoginseng, notoginsenoside, can alleviate endothelial cell damage caused by harmful factors, while notoginseng flavonoids can significantly increase high-density lipoprotein in the blood, neutralizing "toxins" in the blood and softening blood vessels [6]. Hawthorn leaf flavonoids can reduce serum levels of nitric oxide, C-reactive protein, and tumor necrosis factor in rabbits, increase superoxide dismutase and glutathione peroxidase levels, achieving anti-atherosclerotic effects [7]. Alisma-containing serum can increase superoxide dismutase (SOD) levels in vascular endothelial cells after action, indicating that Alisma may protect vascular endothelial cells by increasing SOD to counteract oxygen free radicals [8]. The anthraquinone glycosides in Cassia Seed are the main components that increase cholesterol absorption; additionally, the phenolic compounds in Cassia Seed can exhibit antioxidant effects, preventing the aggregation of oxidized low-density lipoproteins [9].

Previous studies have shown that the Lipid-Regulating and Meridian-Unblocking Formula can significantly reduce blood lipids, improve vascular endothelial damage, alleviate plaque lesions, and reduce the formation of atherosclerosis; it can reduce serum levels of IL-6, CRP, and IL-17, repair the structure and function of damaged vascular endothelial cells, and reduce lipid deposition in the arterial intima; it can lower levels of MMP-1, MMP-2, PD-ECGF, and UA, increase TIMP-1 levels, thereby affecting vascular remodeling in atherosclerosis and improving the condition; it can reduce levels of endothelial cell markers endothelin (ET-1) and thromboxane A2 (TXA2), increase expression of nitric oxide synthase (eNOS) and prostacyclin I2 (PGI2), improving vascular endothelial cell damage and alleviating atherosclerosis [10–12].

"The channels must be unobstructed for Qi and blood to flow" is a fundamental physiological principle. The essence of atherosclerosis is summarized as "obstructed channels", with its key pathological products being "turbid phlegm" and "blood stasis", which intertwine and are difficult to resolve. Syndrome differentiation indicates a "fundamental deficiency with superficial excess". Deficiency of yang Qi (or primordial Qi) in the heart, spleen, and kidney is the root, while turbid phlegm, blood stasis, Qi stagnation,

and cold congealing are the manifestations. Treatment must balance deficiency and excess, considering urgency and chronicity. This provides a source for the modern concept of "treating from the perspective of toxin-damaged collateral vessels". Concepts such as "turbid Qi" and "nests" in ancient texts already contain the embryonic idea of "toxicity" causing disease and damaging collateral vessels, aligning with modern research on inflammatory responses and oxidative stress damaging the endothelium.

In summary, TCM, from the perspective of overall functional imbalance, reveals that the core pathogenesis of atherosclerosis is fundamental deficiency with intertwined turbid phlegm and blood stasis obstructing the channels as the manifestations, establishing a basic treatment strategy of supplementing deficiency, resolving turbidity, activating blood, and unblocking the channels, achieving good clinical effects, especially with significant advantages in improving symptoms and adjusting constitution.

3. Stage-based treatment of atherosclerosis

Early-stage atherosclerosis: Focus on "strengthening the spleen and supplementing Qi to aid digestion and transportation", using a modified Lipid-Regulating and Meridian-Unblocking Formula. This formula combines attack and tonification, treating both the root and manifestations, with Astragalus and Angelica Sinensis supplementing Qi and nourishing blood to address the root, while Hawthorn, Alisma, and Cassia Seed resolve phlegm and eliminate turbidity to treat the manifestations, considering the pathogenesis of fundamental deficiency with superficial excess in this condition.

Middle-stage coronary heart disease, cerebral artery stenosis, peripheral atherosclerotic stenosis or occlusion: Adopt the method of "supplementing Qi and activating blood, unblocking the channels and relieving pain", using a modified combination of the Lipid-Regulating and Meridian-Unblocking Formula and a Qi-supplementing and blood-activating formula. At this stage, patients experience further aggravation of channel obstruction, presenting with symptoms such as chest pain, chest tightness, dizziness, lower limb numbness, pain, and intermittent claudication. The treatment focus is on reversing the disease trend and preventing acute cardiovascular and cerebrovascular events and ischemic gangrene, supplementing the spleen and strengthening the kidney, resolving blood stasis and unblocking the channels to prevent transmission and transformation. In conjunction with TCM treatment, modern minimally invasive interventional therapies such as coronary interventional therapy, cerebral artery interventional therapy, and peripheral artery interventional therapy can be considered based on the actual condition to avoid acute myocardial infarction, acute cerebral infarction, and atherosclerotic gangrene.

Late-stage heart failure after myocardial infarction or heart failure caused by ischemic cardiomyopathy, cerebral infarction, atherosclerotic gangrene: Supplement the spleen and strengthen the kidney to prevent transmission and transformation, using modified formulas such as Buyang Huanwu Decoction, Zhenwu Decoction, Fangji Huangqi Decoction, Tingli Dazao Xiefei Decoction, and Danggui Sini Decoction. At this stage, patients are critically ill with complex etiology and pathogenesis, requiring careful syndrome differentiation in clinical practice to turn the tide and restore stability.

4. Sharing of medical records

Mr. Zhao, male, aged 73, first visited on December 12, 2024. Chief complaint: bilateral lower limb soreness after activity for half a year. Present condition: bilateral lower limb soreness after activity, with the right

side more severe than the left, significantly limited activity, and symptoms appearing after walking 200–300 meters. The skin color of both lower limbs is slightly dark, with normal skin temperature, and weakened pulse of the right dorsal artery of the foot. The tongue is dark with a white and greasy coating, and the pulse is deep. On December 4, a lower extremity vascular ultrasound at Beijing Tsinghua Changgung Hospital revealed atherosclerotic plaque formation in both lower extremity arteries, with multiple segmental stenoses (moderate to severe) in the lumen of the right superficial femoral artery, and intervention therapy was recommended. The disease was identified as arterial obstruction, and the syndrome differentiation was Qi deficiency, blood stasis, and phlegm obstruction. The treatment aimed to replenish Qi, resolve turbidity, promote blood circulation, and unblock the meridians, using a modified Danggui Sini Decoction + Lipid-Regulating and Meridian-Unblocking Formula: Danggui (*Angelica sinensis*) 30 g, Guizhi (*Cinnamomum cassia*) 15 g, Chishao (*Paeonia lactiflora*) 15 g, Xixin (*Asarum heterotropoides*) 10 g, Zhigancao (*Glycyrrhiza uralensis*) 10 g, Xiaotongcao (*Tetrapanax papyriferus*) 6 g, Huangqi (*Astragalus membranaceus*) 30 g, Dilong (*Pheretima*) 15g, Wugong (*Scolopendra*) 2 pieces, Gualou (*Trichosanthes kirilowii*) 10 g, Xiebai (*Allium macrostemon*) 25 g, Fabanxia (*Pinellia ternata*) 9 g, Fuling (*Poria cocos*) 15 g, Zexie (*Alisma orientale*) 15 g, Chaojuemingzi (*Cassia obtusifolia*) 15 g, Jiaoshanzha (*Crataegus pinnatifida*) 15 g, 7 doses, decocted in water and taken orally, one dose per day, divided into morning and evening servings, 150 mL each time.

On the second visit on December 19, 2024, after taking the above prescription, the soreness in both lower limbs decreased, and activity tolerance increased. Currently, he could walk 400–500 meters slowly with rare episodes of lower limb soreness, and the feeling of coldness in the lower limbs significantly decreased. The modified Danggui Sini Decoction + Lipid-Regulating and Meridian-Unblocking Formula was continued: Danggui 30 g, Guizhi 15 g, Chishao 15 g, Xixin 10 g, Zhigancao 10 g, Xiaotongcao 6 g, Huangqi 50 g, Dilong 15 g, Wugong 2 pieces, Gualou 10 g, Xiebai 25 g, Fabanxia 9 g, Fuling 15g , Zexie 15 g, Chaojuemingzi 15 g, Jiaoshanzha 15 g, Jingshanzha (Crataegus pinnatifida var. major) 10g, 7 doses, decocted in water and taken orally, one dose per day, divided into morning and evening servings, 150ml each time. Subsequently, he returned for follow-up every two weeks.

After more than four months of treatment, the soreness in the lower limbs disappeared. On April 17, 2025, a follow-up lower extremity vascular ultrasound at Beijing Tsinghua Changgung Hospital revealed atherosclerotic plaque formation in both lower extremity arteries, with mild to moderate stenosis in the lumen of the right superficial femoral artery. Both the patient's subjective symptoms and objective examinations indicated significant improvement in the condition.

Comment: With the improvement of people's living standards and the influence of unhealthy lifestyles, the number of patients with lower extremity vascular occlusion caused by atherosclerosis is on the rise. Currently, Western medicine treatment mainly focuses on lipid regulation, plaque stabilization, and control of high-risk factors, with peripheral vascular intervention therapy being the main treatment for severe stenosis or occlusion. However, the current treatment efficacy is not satisfactory and has certain limitations. The etiology of atherosclerosis is complex, and modern research has only revealed part of the causes. How to combat atherosclerosis and achieve plaque reversal is an urgent problem to be solved. In traditional Chinese medicine, "lower extremity atherosclerotic stenosis" falls under the categories of "arterial obstruction" and "blood obstruction". Professor Guo Shuwen believes that in the clinical treatment of atherosclerotic diseases, attention should be paid to syndrome differentiation from the aspects of Qi and blood, phlegm turbidity, and

blood stasis. The application of traditional Chinese medicine in treating such diseases has certain advantages. The Lipid-Regulating and Meridian-Unblocking Formula is an empirical formula created by Professor Guo Shuwen, which has the effects of lowering blood lipids and combating atherosclerosis, and has shown plaque reversal effects in clinical applications. Further research is needed to elucidate its mechanism of action, improve efficacy, and promote its large-scale clinical application.

Danggui Sini Decoction originates from "Treatise on Febrile Diseases · Differentiation and Treatment of Jueyin Meridian Disease Based on Pulse and Syndrome", which has the effects of warming the meridians, dispelling cold, nourishing blood, and unblocking the meridians. It is mainly used for treating blood deficiency and cold extremity syndrome, with typical manifestations of cold extremities, or pain in the waist, thighs, legs, feet, shoulders, and arms, no thirst, pale tongue with a white coating, and a deep, thin, or faint pulse. The clinical manifestations of blood deficiency and cold extremity syndrome are similar to those of lower extremity atherosclerotic occlusion in modern medicine. Therefore, the author combined Danggui Sini Decoction with Professor Guo Shuwen's Lipid-Regulating and Meridian-Unblocking Formula in treating this disease to warm the meridians, dispel cold, promote blood circulation, remove blood stasis, nourish blood, and unblock the meridians, aiming to treat both the symptoms and the root cause and further improve efficacy. Practice has proven that the combination of the two formulas has indeed achieved plaque reversal, improved clinical symptoms, and objective examinations also indicate a reduction in lower extremity arterial stenosis, avoiding the trauma caused by surgery and reducing medical costs. During the apprenticeship, the author applied Danggui Sini Decoction combined with the Lipid-Regulating and Meridian-Unblocking Formula to treat multiple patients with lower extremity atherosclerotic stenosis, all achieving satisfactory efficacy, which is worthy of further research and clinical promotion.

5. Summary

Professor Guo Shuwen emphasizes treating atherosclerotic diseases from the perspective of the spleen and stomach, revealing the core role of spleen dysfunction in the pathogenesis of atherosclerosis. "Su Wen · Jing Mai Bie Lun" states: "When food Qi enters the stomach, turbid Qi goes to the heart and nourishes the meridians with essence". It points out that dietary essence can be transformed into nutrient blood or generate "turbid Qi", which is similar to the products of lipid metabolism disorders referred to in modern medicine. "Dan Xi Xin Fa" clearly proposes: "Phlegm combined with blood stasis forms a nest". It recognizes that phlegm turbidity and blood stasis combine to form tangible pathogenic factors, similar to plaques in modern medicine, which block the meridians. Professor Guo Shuwen has deeply studied the classics, comprehensively understood the etiology, pathogenesis, course, progression, and clinical outcomes of atherosclerotic diseases, and emphasized early prevention and treatment. Early intervention in atherosclerosis can effectively reduce the incidence of myocardial infarction and cerebral infarction, which is of great clinical significance.

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Disclosure statement

The authors declare no conflict of interest.

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