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Treating Lower Extremity Arteriosclerosis Obliterans from the Perspective of "Stasis"

Xuan Chen[1], Yuanyuan Shi[1], Jinchuan Hu[1], Yushan Xiao[1], Zhi Li[2,*]

[1]Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China
[2]Xi'an Hospital of Traditional Chinese Medicine, Xi'an 710021, Shaanxi, China
**Correspondence Author*

Abstract: ***Lower extremity arteriosclerosis obliterans (ASO) is a chronic, progressive peripheral arterial disease characterized by atherosclerotic stenosis or occlusion, resulting in compromised blood supply to the lower extremities. Clinically, it presents with symptoms such as intermittent claudication, ischemic pain, decreased skin temperature, and, in advanced stages, ulceration and gangrene. Predominantly affecting middle-aged and elderly populations, the prevalence of ASO is escalating in tandem with global demographic aging trends. The disease significantly impairs patients' quality of life, necessitating comprehensive and effective therapeutic strategies. Traditional Chinese Medicine (TCM) offers a unique and holistic approach to ASO management, with its emphasis on the concept of "blood stasis" (瘀血) as a central pathological mechanism. This paper elucidates the etiology, pathogenesis, and therapeutic interventions for ASO from the perspective of "stasis," integrating classical TCM theories with contemporary clinical practices. By exploring the academic foundations, syndrome differentiation, treatment modalities, and preventive strategies, this study aims to provide novel insights and evidence-based approaches for the integrative management of ASO.***

Keywords: Arteriosclerosis obliterans, Lower extremity, Blood stasis, Pulse arthralgia, Gangrene, Traditional Chinese Medicine**.**

1. Introduction

Lower extremity arteriosclerosis obliterans (ASO) is a manifestation of systemic atherosclerosis, characterized by the narrowing or occlusion of arteries supplying the lower limbs. The disease is associated with significant morbidity, including chronic pain, functional impairment, and, in severe cases, limb loss. Despite advancements in Western medical therapies, including pharmacological, interventional, and surgical treatments, the management of ASO remains challenging, particularly in patients with advanced disease or comorbidities. Traditional Chinese Medicine (TCM), with its millennia-old theoretical framework and clinical experience, offers a complementary approach to ASO management. The concept of "blood stasis" is central to TCM's understanding of ASO, providing a unique lens through which to explore its pathogenesis and treatment. This paper aims to synthesize TCM and Western medical perspectives on ASO, with a focus on the role of "stasis" in disease progression and therapeutic intervention.

2. Understanding of Arteriosclerosis Obliterans in Traditional Chinese Medicine and Western Medicine

2.1 Traditional Chinese Medicine Perspective

2.1.1 Disease Nomenclature

In TCM, ASO is classified under the categories of "pulse arthralgia" and "gangrene". The term "pulse arthralgia" originates from the *Suwen Pingren Meteorological Treatise*, which states, "unsmooth pulse is called arthralgia." The *Plain Questions on the Formation of the Five Zang Organs* further elaborates: "When blood congeals in the skin, it is arthralgia; when it congeals in the pulse, it is weeping; and when it congeals on the feet, it is syncope." The term "gangrene" was first documented in the *Miraculous Pivot: Carbuncle and Gangrene*, which describes gangrene as a condition affecting the feet, characterized by redness and blackening of the skin. The *Liu Juanzi Gui Yi Fang*, a seminal text from the Northern and Southern Dynasties, refined the terminology by replacing "Tuo carbuncle" with "Tuo gangrene," emphasizing the necrotic nature of the condition.

2.1.2 Etiology and Pathogenesis

TCM posits that ASO arises from a combination of internal and external factors, including constitutional deficiencies, dietary indiscretions, and environmental influences. The *Lingshu·Yingwei Shenghui* highlights the role of aging in the pathogenesis of ASO, stating, "The elderly have declining qi and blood, withered muscles, and obstructed pathways." Kidney deficiency is considered the root cause, exacerbated by congenital insufficiency and postnatal malnutrition, leading to poor nourishment of the meridians and subsequent gangrene. The *Waike Zhengzong·Tuoju Lun* attributes the disease to excessive consumption of rich and greasy foods, which scorch the internal organs, and the use of mineral-based tonics that deplete kidney essence. The primary pathogenesis involves vascular obstruction due to blood stasis, with various TCM schools offering distinct interpretations:

Professor Xi Jiuyi [1] emphasizes the principle of "pathogenic factors lead to stasis, and eliminating pathogenic factors takes precedence." He advocates for stage-specific treatment, focusing on the predominance of pathogenic factors, stasis, and damage.

Zhang Chaoyang [2] et al. highlight the stagnation of blood stasis and vascular obstruction as the key pathogenesis, advocating for the "increasing water to move the boat" approach, using large doses of Astragalus and Angelica to promote blood circulation.

Professor Ge Jianli [3] focuses on the obstruction of collaterals by masses, employing the method of "dissipating

masses and unblocking collaterals" to restore meridian flow.

Professor Zheng Xuejun [4] integrates the theory of nutrient-defense in collateral disease, emphasizing the role of insect-based drugs in promoting blood circulation and resolving stasis.

Professor Shang Dejun [5] underscores the commonality of blood stasis in diabetic lower extremity ASO, advocating for tailored treatment based on the patient's condition.

Chen Shuchang established the theory of cold coagulation and blood stasis, recommending the warm-unblocking method and the use of Wenmai Tong Tablets to achieve clinical efficacy.

2.2 Western Medical Perspective

2.2.1 Pathogenesis

The etiology of ASO is multifactorial, involving both modifiable and non-modifiable risk factors. Key contributors include smoking, diabetes mellitus, hypertension, hyperlipidemia, hyperhomocysteinemia, chronic renal insufficiency, and elevated inflammatory markers. The pathogenesis of ASO is underpinned by several mechanisms:

1) Endothelial Injury and Smooth Muscle Cell Proliferation: Chronic endothelial damage triggers the release of growth factors, leading to intimal thickening and the accumulation of extracellular matrix and lipids.

2) Lipid Metabolism Disorder: Dysregulated lipid metabolism results in the infiltration and deposition of lipids within the arterial wall, contributing to plaque formation.

3) Shear Stress: Hemodynamic forces at arterial bifurcations or anatomical narrowings cause chronic mechanical damage to the arterial wall, exacerbating atherosclerotic changes.

2.2.2 Clinical Manifestations

The clinical presentation of ASO is stratified according to the Fontaine classification, which divides the disease into four progressive stages:

1) Stage 1 (Mild Complaint Stage): Patients may experience coldness, pallor, and mild numbness in the affected limb.

2) Stage 2 (Intermittent Claudication Stage): Intermittent claudication, characterized by muscle cramps, pain, and weakness during walking, is a hallmark symptom. Symptoms typically resolve with rest.

3) Stage 3 (Rest Pain Stage): Severe ischemic pain occurs at rest, often accompanied by trophic changes such as skin atrophy, nail dystrophy, and muscle wasting.

4) Stage 4 (Tissue Necrosis Stage): Ulceration and gangrene develop, initially affecting the toes and potentially progressing to involve the foot and calf.

2.2.3 Diagnosis

Diagnosis of ASO is based on a combination of clinical history, physical examination, and imaging studies. Key diagnostic tools include:

1) Ankle-Brachial Index (ABI): A non-invasive measure of arterial perfusion, with an ABI ≤ 0.9 indicative of ASO.

2) Imaging Modalities: Computed tomography angiography (CTA), magnetic resonance angiography (MRA), and digital subtraction angiography (DSA) provide detailed visualization of arterial stenosis or occlusion.

3) Differential Diagnosis: ASO must be distinguished from thromboangiitis obliterans (Buerger's disease), neurogenic claudication, and Takayasu's arteritis.

3. Academic Basis of the Pathogenesis Theory of "Stasis Obstructing the Collaterals"

3.1 Theoretical Basis

The *Suwen·Liaoci Lun* states, "When a person falls or is injured, evil blood remains internally, causing abdominal fullness and difficulty in urination and defecation." This highlights trauma as a primary cause of blood stasis. The *Xuezheng Lun* notes, "In a healthy person, blood flows smoothly through the collaterals," but disruptions in qi and blood flow can lead to stasis. The *Waike Zhengzong·Yongju Yuanwei Lun* describes the influence of external pathogens, such as wind, cold, and dampness, in causing blood stasis.

3.2 Pathological Basis

ASO is characterized by "stasis obstructing the collaterals," leading to pain, intermittent claudication, and trophic changes.

The *Nanjing·Twenty-second Difficulty* emphasizes the nourishing function of blood, which is compromised in ASO, resulting in skin temperature reduction, hair loss, and necrosis.

3.3 Constitutional Basis and Therapeutic Validation

The *Huangdi Neijing* highlights the role of constitution in disease progression. Ye Tianshi emphasized the importance of constitutional identification in treatment. The *Waike Zhengzong* underscores the significance of protecting the spleen and stomach in maintaining health.

4. Treatment Strategies: Integrating Traditional Chinese Medicine and Western Medicine

4.1 Traditional Chinese Medicine Treatment

4.1.1 Internal Treatment

1) Cold Coagulation and Blood Stasis Syndrome: Warm the meridians and unblock vessels using Yanghe Decoction

2) Blood Stasis Obstructing the Collaterals Syndrome:

Activate blood circulation and resolve stasis using Taohong Siwu Decoction.

3) Qi and Blood Deficiency Syndrome: Tonify qi and nourish blood using Bazhen Decoction combined with Buyang Huanwu Decoction.

4.1.2 External Treatment

1) Pre-Ulceration Stage: Protect the affected limb and avoid irritation.

2) Ulceration Stage: Use herbal fumigation, wet compresses, and medicated ointments for necrotic tissue removal.

4.1.3 Acupuncture and Moxibustion

Moxibustion is recommended in the early stages to expel pathogens and prevent disease progression.

4.2 Western Medicine Treatment

4.2.1 General Treatment

The cornerstone of Western medical management for ASO involves lifestyle modifications and risk factor control. Patients are advised to quit smoking, as tobacco use accelerates atherosclerosis. Exercise therapy, particularly supervised walking programs, improves collateral circulation and walking distance. Additionally, blood glucose control (for diabetics), bloodpressure management, and lipid-lowering therapy are essential to slow disease progression.

4.2.2 Pharmacological Treatment

Antiplatelet agents reduce thrombotic events by inhibiting platelet aggregation. Cilostazol, a phosphodiesterase-3 inhibitor, is used to alleviate intermittent claudication by vasodilation. Prostaglandin analogs improve microcirculation in critical limb ischemia. Anticoagulants may be considered in acute thrombosis.

4.2.3 Interventional Treatment

For moderate-to-severe cases, endovascular therapies are preferred due to their minimally invasive nature: Percutaneous transluminal angioplasty (PTA) with balloon dilation restores blood flow. Stent implantation prevents arterial recoil and restenosis. Atherectomy removes atherosclerotic plaques mechanically.

4.2.4 Surgical Treatment

In advanced disease, open surgical options include: Bypass grafting using autologous veins or synthetic grafts. Endarterectomy for localized plaque removal. Amputation as a last resort for non-salvageable limbs with gangrene.

4.3 Integrative Approaches

Combining TCM and Western medicine may enhance therapeutic outcomes: TCM herbal formulas may complement antiplatelet therapy by improving microcirculation. Acupuncture alongside rehabilitation exercises could alleviate pain and promote collateral circulation. Moxibustion may aid in early-stage disease by improving local blood flow, while Western drugs target systemic risk factors. To sum up, ASO requires a multimodal approach. Western medicine excels in acute revascularization and systemic risk control, while TCM offers holistic symptom management and disease-modifying potential through herbal medicine and physical therapies. Future studies should explore synergistic effects of integrated protocols.

5. Prevention and Prognosis: Adjusting Constitution to Mitigate Disease Progression

5.1 Traditional Chinese Medicine (TCM) Approach

TCM emphasizes preventive treatment of disease by regulating the patient's constitution to prevent disease progression.

5.1.1 Constitutional Differentiation & Herbal Prevention

1) Yang-deficient constitution: Patients prone to cold limbs and fatigue should use warming herbs to improve circulation.

2) Phlegm-dampness constitution: Obesity and metabolic disorders increase atherosclerosis risk. Erchen Decoction can resolve dampness and reduce lipid accumulation.

3) Blood stasis constitution: Early intervention with blood-activating herbs may delay plaque formation.

5.1.2 Lifestyle & Dietary Adjustments

Moxibustion & Acupressure at Zusanli and Sanyinjiao strengthens Qi and blood circulation. Dietary therapy: Warm-natured foods for cold limbs; bitter melon and hawthorn for lipid regulation.

5.2 Western Medicine Approach

Western medicine focuses on primary and secondary prevention through risk factor modification and early detection.

5.2.1 Primary Prevention (Before Disease Onset)

1) Smoking cessation: The strongest modifiable risk factor for atherosclerosis.

2) Exercise & Weight Control: Regular aerobic exercise improves endothelial function.

3) Pharmacological prophylaxis: Statins for high-risk patients with hyperlipidemia.

5.2.2 Secondary Prevention (After Diagnosis)

Aggressive LDL control (target: <70 mg/dL in PAD patients). Blood pressure management (ACE inhibitors preferred for endothelial protection). Annual ABI screening for early detection of progression.

5.3 Prognosis & Long-Term Management

5.3.1 TCM Prognostic Markers:

1) Tongue & pulse diagnosis: A dark-purple tongue with wiry pulse suggests worsening stasis.

2) Symptom progression: Persistent coldness/numbness indicates poor collateral circulation.

5.3.2Western Prognostic Indicators:

1) Rutherford staging: Predicts amputation risk in critical limb ischemia.

2) Wound healing rate: Reflects microcirculatory sufficiency post-revascularization.

3) Integrative Strategies for Better Prognosis: Combining antiplatelet drugs with TCM blood-activating herbsto reduce thrombosis risk.

The authors posit that middle-aged and elderly patients are particularly susceptible to blood stasis syndrome due to both external pathogen invasion and the gradual decline of visceral function. Therefore, the principal therapeutic strategy for this condition should focus on promoting blood circulation and resolving stasis Clinically, this foundational approach may be effectively combined with adjunct therapies including dampness elimination, middle-jiao warming, tonification, detoxification, and heat-clearing to achieve optimal therapeutic outcomes.

Both Traditional Chinese Medicine and Western medicine present distinct advantages and limitations in managing this condition. As clinical practitioners, we should judiciously integrate the strengths of both medical systems to alleviate patient suffering while reducing the societal healthcare burden. This approach aims to establish a standardized diagnostic and therapeutic protocol for primary healthcare institutions in treating this disease.

References

[1] Xi JY. Thinking and method on the treatment of vascular diseases [in Chinese]. Shanghai J Tradit Chin Med. 2001;35(6):4-6.
[2] Zhang CY, Xu Q, Li PC. Examples of proven cases on the treatment of arteriosclerosis obliterans of lower limbs by the method of increasing water [in Chinese]. Tradit Chin Med J. 2021;20(4):58-59,62.
[3] Zhang J, Jing X, Zhang M, et al. Ge Jianli's experience in treating lower extremity arteriosclerosis obliterans with Xiaozheng Tongluo therapy [in Chinese]. Hebei J Tradit Chin Med. 2020;42(3):328-331. doi:10.3969/ j.issn.1002-2619.2020.03.002
[4] Fu J, Jia L, Chen K, Zhang X. Prof. Zheng Xuejun's experience in the treatment of lower extremity arteriosclerosis obliterans based on the TCM theory of arteries and veins [in Chinese]. Guangxi J Tradit Chin Med. 2023;46(4):53-56.
[5] Min CX, Xu YS. Experience of Traditional Chinese Medicine Master Shang Dejun in treating diabetic arteriosclerosis obliterans of lower limbs [in Chinese]. Shandong J Tradit Chin Med. 2022;41(11):1211-1214.

Author Profile

Zhi Li M.D., Ph.D. Director, Department of Surgery Xi'an Hospital of Traditional Chinese Medicine Professor (Master's Supervisor) XI'AN HOSPITAL OF TRADITIONAL CHINESEMEDICINE Email: zhili1128@126.com Postal Code: 712046

Xuan Chen Shaanxi University of Chinese Medicine Xi'an, Shaanxi Province, China Postal Code: 712046