

Original Paper

Origin of Phlegm-Stasis-Toxin Theory and Its Empirical
Application in Syndrome Differentiation of Carotid
Atherosclerosis

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Abstract

Summarize Professor Yan Yongmei's experience in treating carotid atherosclerosis by applying the theory of "phlegm, blood stasis and poison". Professor Yan Yongmei believed that the main pathogenic factors of carotid atherosclerosis were phlegm turbidities, toxicosis and blood stasis, and the interaction of phlegm, blood stasis and toxicosis was the key pathogenesis of carotid atherosclerosis. In the clinical treatment, we should focus on "resolving phlegm and promoting blood circulation, detoxifying toxins and clearing arteries", and emphasize that we should pay attention to life, exercise and diet.

Keywords

"phlegm, blood stasis, poison" theory; carotid atherosclerosis; clinical experience; Yan Yongmei

1. Introduction

Atherosclerosis (AS) is a progressive vascular disease characterized by the accumulation of lipids and inflammatory cells in the walls of medium and large arteries. It is an important pathological basis^[1]Among them, the carotid artery is the most frequently involved site of atherosclerosis because of its physiological structure characteristics^[2]; The carotid artery, located in the neck, is one of the major blood vessels in the brain that delivers blood from the heart to the head, face, and neck. It is located superficially and can serve as a "window" to reflect the overall condition of the body. Carotid artery atherosclerosis (carotidatherosclerosis, CAS) is a typical manifestation^[3]As a chronic cardiovascular and cerebrovascular disease that endangers human health, it is an independent risk factor for cerebrovascular

disease. Early intervention for it can prevent or delay the occurrence and recurrence of cerebrovascular disease.

The pathogenic factors of carotid atherosclerosis are very complex, the clinical symptoms recur repeatedly, are stubborn and difficult to cure, the course of the disease is long, and the reversibility is poor. It belongs to the category of chronic diseases, and traditional Chinese medicine shows unique advantages in this category. Professor Yan Yongmei is the sixth batch of national senior traditional Chinese medicine academic experience inheritance mentors, famous traditional Chinese medicine doctor of Shaanxi Province, Qihuang Scholar, and academic leader of the key discipline of brain disease of the State Administration of Traditional Chinese Medicine. Under the guidance of Professor Zhang Xuewen, a national master of traditional Chinese medicine, she inherited and innovatively applied the theory of phlegm, stasis and toxicity to treat carotid atherosclerosis, achieving excellent clinical results. Here is an introduction to Professor Yan's experience in treating coronary plaques.

2. Understanding of Carotid Atherosclerosis between Chinese and Western Medicine

Carotid atherosclerosis is a modern medical name; there is no such name in traditional Chinese medicine. According to the different clinical manifestations, traditional Chinese medicine practitioners have classified diseases caused by it into the categories of "stroke", "vertigo", "chest pain", "phlegm turbidity", etc. At its root, the meridians in traditional Chinese medicine are the channels through which qi and blood flow, which is equivalent to the arteries in modern medicine. Therefore, the pulse in traditional Chinese medicine is equivalent to carotid atherosclerosis in Western medicine. In "On Bi Syndrome · Plain Questions", the causes of bi syndrome were first proposed: "Bi syndrome is caused by summer qi flowing through the heart, the heart governs the meridians, insufficient heart qi in summer, feeling pathogenic qi, and damaging the blood vessels...". In "Plain Questions", it is proposed that "if the pain is in the pulse, the blood clots and does not flow," indicating that the cause and mechanism of pulse pain lie in the obstruction of the blood. Zhu Bing Yuan Hou Lun pointed out: "In summer, when there is arthralgia, the blood clots and does not flow, causing atrophy and yellowing." "Spiritual Pivot · Treatise on Longevity" says: "... A disease in the Yin is called bi. There are more than 40 articles in Neijing that are related to bi disease, and there are many discussions about bi disease. It is stated that bi disease is often caused by the invasion of external pathogenic factors such as wind, cold and dampness on the surface of the muscles, muscles, joints, blood vessels, etc., resulting in dysfunction of the internal organs, poor circulation of qi, blood, body fluids, and blocked meridians. It mostly covers the categories of phlegm, stasis and toxins. In "On Bi Syndrome · Plain Questions" it says: "If the pain is in the bones, it is severe; if it is in the pulse, the blood clots and does not flow." The location of the disease is the pulse, and the affected organs involve the heart, brain and kidneys^[4]. In addition, "Spiritual Pivot · Treatise on Diseases of Cold and Heat" states: "The arteries on the side of the neck, the human face. Ren Ying is the foot yangming, before the infant sinew." It is discussed that the site of carotid atherosclerosis is close to the human Yingmai, and the nature of carotid atherosclerotic plaques is similar to the "accumulation syndrome" in traditional

Chinese medicine. Therefore, some experts have named^[5]The causes of carotid atherosclerosis in traditional Chinese medicine tend to be the result of the interaction of factors such as old age and physical weakness, insufficient endowment, dietary imbalance, emotional imbalance or invasion of external pathogenic factors. The pathogenesis is mostly based on deficiency of the root and excess of the symptoms. Deficiency of the root is mainly due to kidney deficiency, which is often caused by dysfunction of the liver, spleen, kidney and other organs. Excess of the symptoms is mainly phlegm turbidity, blood stasis and heat toxins^[6]. According to Academician Wu Yiling, AS is caused^[7]As Danxi's Essential Therapeutics states: "Phlegm carries blood stasis and thus forms a nest sac." Insight into Medicine says: "A man who has a craving for rich, sweet or fine wine and cheese gets dampness from within,... Dampness generates phlegm, phlegm generates heat, heat generates wind, and thus fainting in ignorance." From this, it can be seen that phlegm turbidity, blood stasis, and toxins (heat toxins) are the main understanding of the pathogenic factors of atherosclerosis by ancient physicians, and have become the guiding principles for the treatment of carotid atherosclerosis syndrome by later physicians.

CAS is a chronic disease with complex etiology, and it shares the same pathophysiological basis as atherosclerotic lesions throughout the body. It is part of the blood vessels throughout the body and can simultaneously reflect the tendency of vascular lesions in other organs throughout the body. It is caused by physiological and pathological changes such as thickening of the arterial walls, resulting in reduced elasticity, narrowing of the lumen, disorders of blood glucose and lipid metabolism, abnormal platelet function, which eventually lead to hemodynamic disorders and cause the disease^[8-9]. The pathogenesis is mainly related^[10]Continuous progression of carotid atherosclerosis can lead to increased carotid intima-intimal thickness in patients, accompanied by varying degrees of plaque formation, arterial plaque rupture, and exposure of subcutaneous collagen inducing platelet activation, activating the coagulation process to form thrombus, resulting in lumen stenosis, cerebral infarction, etc^[11]Clinically, screening for carotid atherosclerotic plaques includes carotid vascular ultrasound, magnetic resonance angiography, high-resolution magnetic resonance imaging, DSA, etc. Carotid artery ultrasound has a high recognition rate for plaques because of its convenience, non-invasiveness and low cost in clinical examination. Magnetic resonance imaging (MRI) is highly sensitive in identifying carotid atherosclerotic plaques and can specifically identify and measure plaque components. However, due to disadvantages such as high cost, contraindications, and long examination time, high-resolution MRI is seriously hindered from being used for plaque screening^[12]The prevention and treatment of CAS mainly include controlling risk factors, lifestyle changes, the use of lipid-regulating and antithrombotic drugs, and endovascular interventional therapy.

3. Phlegm, Blood Stasis and Toxins are Factors Contributing to the Onset of Carotid Atherosclerosis

Professor Yan Yongmei believes that phlegm turbidity, blood stasis and toxins run through the entire pathological process of the occurrence and development of CSA and are the main pathogenic factors of

atherosclerosis. At the same time, phlegm, stasis and toxins causing obstruction of the blood vessels, over time leading to stasis of the meridians, are the main pathogenesis of CAS.

3.1 Phlegm Turbidity

Phlegm is a pathological product formed by the accumulation of body fluids in the body due to abnormal qi transformation function. At the same time, it can also act as a pathogenic factor causing various diseases. Phlegm can be divided into "visible phlegm" and "invisible phlegm". "Visible phlegm" refers to the pathological product that is produced in the lungs and stomach and can be excreted from the body, mostly referring to the phlegm that is clinically "vomited". "Invisible phlegm" refers to the pathological product of the imbalance of the internal organs, the disharmony of qi and blood, and the accumulation of body fluids, which remains in the chest and diaphragm, meridians, internal organs and other parts of the body. Phlegm is closely related to the internal organs. All five internal organs can produce phlegm, and at the same time, phlegm can affect the functions of the corresponding internal organs. Phlegm is often blamed on the lung, spleen and kidney. Dysfunction of the lungs, spleen and kidneys and abnormal metabolism of body fluids are the key to the generation of phlegm turbidity. General Treatise on the Cause and Symptoms of Diseases states: "Phlegm retention is caused by the blockage of qi vessels, the obstruction of body fluids, the retention of water and qi in the chest, and the accumulation of phlegm"^[13]Carotid atherosclerosis is a chronic disease with a complex etiology and diverse clinical symptoms. Professor Yan believes that to analyze the causes of carotid atherosclerosis from the perspective of traditional Chinese medicine theory, one should start from the "phlegm turbidity" theory, and the causes should be recognized from the perspectives of external invasion of the six exogenous pathogenic factors, internal injury of the seven emotions, and improper diet. So there is the saying that "all diseases are caused by phlegm" and "all symptoms are strange, all belong to phlegm"^[14]Phlegm turbidity is the key link in the onset of carotid atherosclerosis. The occurrence and development of carotid atherosclerosis are closely related to "phlegm turbidity", embodying the development pattern from "invisible" to "visible". With the development of the economy and society, modern people consume "deep-processed foods" and high-fat foods, promoting the endogenous growth of "phlegm turbidity". A survey in 2024 showed that excessive intake of "processed foods" and high-fat foods promotes carotid plaque formation and has a strong positive correlation^[15]

3.2 Blood Stasis

Stasis is the accumulation of blood. In "A Treatise on Blood Syndromes", Tang Rongchuan pointed out: "The blood that has not been expelled from the meridians is called stasis blood"^[16]From this, it can be seen that stasis is a pathological product caused by the abnormal circulation of qi, blood and body fluids in the human body, which blocks the meridians. When the circulation of blood slows down and is not smooth, the body presents a corresponding pathological state - blood stasis. The main pathological product of blood stasis is blood stasis, which, once formed, will block the meridians, resulting in blood stasis. Therefore, stasis is not only a pathological product but also a pathogenic factor. The causes of this disease are no more than old age and weakness, improper diet, excessive five emotions, and long-term

illness that harms the body. A variety of factors cause dysfunction of the internal organs and internal stasis of blood. "Qi is the commander of blood, and blood is the mother of qi." When qi flows, blood flows; when qi is blocked, blood is obstructed. Carotid atherosclerosis is more common in middle-aged and elderly people whose vital energy is waning. Qi deficiency cannot push blood through the veins, blood flow is weak, blood stasis leads to blood stasis, blood stasis obstructs the carotid vein, cementation and aggregation form carotid atherosclerosis. Neijing says: "At the age of forty, the Yin energy is half and the daily life is declining." In middle age, towards old age, the Yin of the internal organs is insufficient, the essence of the kidney is gradually exhausted, the essence and blood are deficient, the blood vessels are not good, the blood flow is slow and stasis occurs, and the stasis is in the blood vessels and obstructs the meridians and causes this disease. "Generally, meridians govern qi and collaterals govern blood. Long-term illness leads to blood stasis. Initially, it is qi stagnation in the meridians, and over time, blood injury enters the collaterals." There is the saying that "long-term illness often leads to blood stasis." Professor Yan believes that blood stasis blocking the meridians is a key factor in carotid atherosclerosis and runs through the entire development and evolution of carotid atherosclerosis. In "Spiritual Pivot · Discourse on Differentiating Qi," it is said: "Obstructing the vital energy and leaving no place to hide is called the meridian." When the blood vessels are damaged, the blood overflows outside the vessels or stays in them, becoming stasis. Modern medicine holds that impaired vascular endothelial cell (VEC) integrity at all stages of AS development is key to inducing monocyte adhesion and transforming into foam cells, exacerbating local inflammation and plaque formation.^[17]Chronic inflammation is the main pathological change of AS, which is caused by lipid deposition, inflammatory infiltration and extracellular matrix deposition on the arterial wall, leading to the formation of AS plaques. Lipid accumulation, release of inflammatory factors and protein aggregation are in^[18] the microscopic pathological^[18] manifestation of "stasis" in traditional Chinese medicine pathogenesis.

3.3 Toxic Pathogenic Factors

"Poison" refers to substances that have adverse effects on the physiological functions of the body. In "Synopsis of Prescriptions of the Golden Chamber", "poison is what is meant by the accumulation of evil." According to the source, poisons are divided into external poisons and internal poisons. Endogenous toxins often occur on the basis of internal injury and miscellaneous diseases, mostly due to the dysfunction of the internal organs and the disorder of the circulation of qi and blood, which leads to the accumulation and stagnation of various pathogens. It is the toxins that are closely related to the occurrence and development of carotid atherosclerosis. Phlegm and blood stasis, as pathological products of body fluid metabolism, can themselves transform into toxins and cause harm, forming phlegm toxins and blood stasis toxins. Atherosclerosis of the carotid artery is prone to occur in the age of forty. When people reach middle age and old age, the five internal organs gradually become weak, and the toxins cannot be expelled in time and accumulate in the body. Then the toxins hide in the blood vessels, the accumulation does not stop, hinders the circulation of qi and blood, leads to abnormal circulation of qi and blood throughout the body, and the formation of phlegm and stasis in the meridians network. The

toxins and phlegm and stasis accelerate and adhere, damaging the meridians. The phlegm and turbidity adhere to the meridians wall and form plaques. It leads to atherosclerosis, plaque formation, and vascular stenosis. Professor Yan believes that such patients are mostly overweight due to their fondness for rich and greasy food, and with the accelerated pace of modern life, they often have irregular living schedules, unhealthy diets, lack of exercise and other living habits, and the stress of life and work leads to heavy thoughts, long-term emotional distress leads to depression and internal heat, irregular eating, even overeating, which damages the spleen and stomach over time, causes dampness and generates phlegm, Phlegm and blood stasis entwine, and over time, they accumulate and produce "internal toxins". "True Teachings for Preserving Longevity," says: "the onset of disease is very subtle; it is the accumulation that leads to the onset of toxicity." [16]Therefore, Professor Yan believes that in the process of carotid atherosclerosis, phlegm, turbidity, blood stasis and toxins accumulate and plaque is formed, and toxicity is also an important factor in the onset of carotid atherosclerosis.

4. The Interaction of Phlegm, Blood Stasis and Toxins is the Key to the Pathogenesis of Carotid Atherosclerosis

All diseases of the human body involve qi, blood and body fluids. Phlegm is a variation of body fluids and blood. Phlegm and blood stasis have the same origin. Stasis of blood blocks the meridians and causes obstruction of the distribution of body fluids, which accumulates into phlegm. In "A Treatise on Blood Syndromes", Tang Rongchuan made it most explicit: "It should be known that the stasis of phlegm and water, phlegm and stasis interweave into nests." In "All Causes & Manifestations · Various Phlegm Symptoms", it is written: "All phlegm is caused by the blockage of blood vessels and the accumulation of water that does not disperse, so phlegm can be produced." therefore, phlegm pathogen can cause blood stasis, and vice versa, blood stasis can also produce phlegm dampness. The onset of carotid atherosclerosis is caused by various internal and external factors leading to dysfunction of the internal organs, which can cause disorders of the functions of qi, blood, body fluids, etc. in the human body, resulting in the retention of internal pathogenic factors such as phlegm and stasis, the generation of phlegm turbidity, which is prone to block qi movement, qi movement stagnation, and the generation of stasis blood. Stasis and phlegm are intermingled and cannot be removed, attaching to the meridians to form plaques. The head is where the Yang converge and where the clear orifices are located. The carotid artery is located in the neck. It is a large vessel that transports blood from the heart to the head, face and neck. It is one of the main vessels supplying blood to the brain. The carotid artery is located superficially and is regarded as a "window" reflecting the condition of the blood vessels throughout the body. Just as "Pure brain marrow is smart, mixed brain marrow is dull" in Combined Records of Chinese and Western Medicine. Professor Yan Yongmei believes that "the brain orifices can only receive the clear qi of the human body, not the diseased qi of the human body." Revealing that the brain can only be nourished by the clear Yang qi of the zang-fu organs and the essence of qi and blood, and cannot be disturbed by evil qi. There are two reasons for this. One is that the brain is the highest point of the human body and the

residence of the primordial spirit, and it is not easily invaded by pathogenic factors. Second, "When the vital energy is in the body, evil cannot invade." When phlegm and stasis are not abundant, it is not easy to invade the brain. Once phlegm and stasis reach the extreme and produce phlegm toxins and stasis toxins, it will damage the vital energy in the brain orifices. "Where evil gathers, qi must be weak." Phlegm, blood stasis and toxins are not only pathological products of dysfunction of the internal organs, but also pathogenic factors of carotid atherosclerosis. Phlegm and blood stasis carry toxins and are difficult to clear and disperse, and toxins and blood stasis carry phlegm and are hard to dissolve, damaging the clear Yang qi of the brain orifices, leading to the state of excessive pathogenic factors and deficiency of the body, thus forming the syndrome of phlegm, blood stasis and toxins damage, and ultimately blocking the meridians and damaging the brain and internal organs. Professor Yan Yongmei believes that the phlegm and stasis in carotid atherosclerosis are the pathogenic factors of phlegm and stasis toxins, meaning that phlegm and stasis are internally generated, intermingled, sticky for a long time, and turn into pathogenic toxins. That is, "there is no poison without evil; it is poison that arises." In addition, many pathogenic factors of carotid atherosclerosis are caused by internal toxins, often due to smoking, drinking, mood swings, high-fat diet, spleen dysfunction, internal phlegm turbidity, accumulation of heat over time, stasis heat accumulation, obstruction of qi movement, and disorder of qi and blood; High psychological stress can cause disharmony of the five emotions and lead to excessive fire in the heart and liver, which accumulates toxins over time. The combination of phlegm, blood stasis and toxins can cause damage to the vessel walls, which gradually thicken and narrow, eventually leading to carotid atherosclerosis. To sum up, Professor Yan believes that the intermingling of phlegm, blood stasis and toxins is the key etiology and pathogenesis of carotid atherosclerosis, and the treatment is based on the methods of resolving phlegm, promoting blood circulation, detoxifying and unblocking the pulse.

5. Classic Cases

Yin, male, 48 years old, presented with "episodic numbness of the left limb for one week" on September 28, 2014. Chief complaint: The patient experienced paroxysmal numbness in the left limb about 3-4 times a day, each episode lasting about 4-9 hours, accompanied by dizziness, numbness in the head, unclear mind, average appetite, normal sleep at night, and normal defecation and urination. The tongue is dark red, the coating is yellow and greasy, and the pulse is fine and sluggish. There is a history of hyperlipidemia, but no history of hypertension, coronary heart disease, hyperlipidemia or diabetes; No history of food or drug allergies. Carotid ultrasound: Soft plaque formation at the bifurcation of bilateral common carotid arteries; Reduced velocity in the left internal carotid artery and bilateral vertebral arteries. (At the bifurcation of the left common carotid artery, an irregular moderate to low echo plaque of about 34.0mm×6.5mm attached to the anterior lumen protrusion, and color Doppler flow imaging shows a filling defect of the blood flow signal at that location; A range of approximately 80.0mm×7.1mm of hypoechoic plaque attachment was visible on the anterior wall laterally from the distal end of the right common carotid artery to the origin of the internal carotid artery, and color Doppler flow imaging showed

a filling defect of the blood flow signal there. The four diagnostic methods are combined. The disease is classified as numbness, which falls within the category of pulse obstruction. The syndrome is classified as phlegm stasis and toxicity damage syndrome. The treatment is to transform phlegm, promote blood circulation, detoxify and unblock the meridians. Prescription: Salvia miltiorrhiza 30g, Coptis 5g, hawthorn 25g, Earthworms 12g, Ligusticum chuanxiong 12g, dried tangerine peel 12g, Pinellia 10g, Glycyrrhiza 6g. A total of 14 doses, one daily dose, decocted in water 400ml, taken warm in the morning and evening.

Second visit on October 13, 2014. The patient did not experience numbness in the limbs again, and the condition improved. The duration of the episodes was shorter than before. The patient slept better at night. The tongue was dark red, the coating was white and greasy, and the pulse was fine and sluggish. Therefore, the original prescription was removed from Scutellaria baicalensis, and 14 doses were continued as before. After the follow-up visit, the symptoms of dizziness, numbness of the head and unclarity of mind disappeared. The treatment was still mainly to transform phlegm, promote blood circulation, detoxify and unblock the meridians, and it was made into pills and continued to be taken. He was advised to exercise regularly, follow a light and low-fat diet, quit smoking and drinking, keep a regular schedule and avoid staying up late.

On July 30, 2015, re-examination of two-dimensional, color blood flow and spectral Doppler of the neck vessels showed no abnormalities, and the patient had no more discomfort symptoms.

Note: The patient was a middle-aged male with a history of hyperlipidemia. Professor Yan Yongmei uses Salvia miltiorrhiza as the principal drug. Salvia miltiorrhiza is good at promoting blood circulation and removing blood stasis and is a key drug for treating blood stasis obstruction. It also uses unblocking as a tonic to achieve the effects of "tonifying qi" and "nourishing blood". According to Ben Cao Zheng Yi, "Salvia miltiorrhiza specifically enters the blood part, and its function lies in activating and promoting blood circulation..." But while it runs, it is not a tonic. That is, the "tonifying qi" in the Classic and the "nourishing blood" in the supplementary records both mean that the accumulation and stagnation will be removed and the vital energy will be extended." The Compendium of Materia Medica says, "... Therefore, in the Theory of the Ming Dynasty, Salvia miltiorrhiza has the functions of four substances: tonifying and generating blood, benefiting and expelling blood, regulating and gathering blood, being more powerful than Paeonia lactiflora, expelling blood stasis and generating new blood, and being twice as poor as ligusticum.... The function of Salvia miltiorrhiza in promoting blood circulation and removing blood stasis, removing blood stasis without harming the body's vital energy, can remove blood stasis and preserve the mechanism of qi and blood generation, thereby allowing new blood to be produced spontaneously. Coptis chinensis, bitter and cold, clears heat, dries dampness, relieves fire and detoxifies, that is, dries dampness and eliminates phlegm, and eliminates the influence of inflammatory factors. When combined with the main ingredient, the two together produce the effect of promoting blood circulation and detoxifying. Hawthorn promotes blood circulation and removes blood stasis, regulates qi and eliminates accumulation, and dispels food heat. The earth dragon is good at passing through the

meridians and is good at treating meridian blockage, poor blood circulation, and poor limb joints. Ligusticum chuanxiong, "Qi in the blood", "qi is the commander of blood", has a thin and strong taste, is pungent and dispersive, can reach up to the head and down to the blood sea, and has the dual effects of promoting blood circulation and regulating qi. These three ingredients, together as a secondary ingredient, enhance the power of promoting blood circulation and removing blood stasis, and promote the flow of qi and blood through the meridians. The basic ingredients for strengthening the spleen, drying dampness and transforming phlegm are complementary to the two Chen - dried tangerine peel and pinellia ternata, which dry dampness and transform phlegm, regulate qi and harmonize the middle, and eliminate pathogenic factors and protect the middle. Licorice harmonizes the herbs. When combined, they work together to relieve phlegm, promote blood circulation, detoxify and unblock the meridians. Modern pharmacological research shows that salvia miltiorrhiza extract can improve atherosclerosis by regulating glycolipid metabolism, anti-inflammation, improving local microcirculation, reducing vascular endothelial damage and anti-platelet aggregation, as well as inhibiting inflammatory mediators and improving inflammatory^[20]Berberine, an active ingredient in Coptis chinensis, has antibacterial and anti-inflammatory effects^[18]; Hawthorn works^[21] against atherosclerosis by lowering blood lipids, antioxidation, increasing the production of activating regulatory factors, and antiplatelet aggregation. Earthworm has anti-inflammatory, expectorant, wound repair and accelerated healing, platelet aggregation inhibition and lipid-lowering effects^[23]Ligusticum chuanxiong can exert anti-inflammatory effects through different signaling pathways and has anti-atherosclerotic effects^[24]Dried tangerine peel has antioxidant, free radical scavenging and expectorant effects^[22]. Pinellia has expectorant, anti-inflammatory and antioxidant effects^[26]. Glycyrrhiza flavonoids have significant biological activity in terms of antibacterial, antioxidant and anti-inflammatory properties, and glycyrrhiza also has an anti-atherosclerotic effect^[27].

6. Conclusion

Professor Yan believes that the three pathogenic factors of phlegm turbidity, blood stasis and toxins are not independent single influencing factors in the onset of carotid atherosclerosis, but are interrelated and mutually influential. In the process of body fluid metabolism, phlegm retention and blood stasis can be produced, which in itself can form phlegm toxins and blood stasis toxins. Heat causes toxins to transform, and stasis causes toxins to accumulate. A variety of pathological factors persist, accumulate for a long time to form toxins, and the combination of phlegm, blood stasis and toxins is formed. The intermingling of phlegm, blood stasis and toxins is a key symptom of carotid atherosclerosis. Therefore, in clinical practice, it is often necessary to treat "intermittently and sometimes alone" in order to be effective. Based on years of clinical experience, Professor Yan believes that the intermingling of phlegm, blood stasis and toxins is the key etiology and pathogenesis of carotid atherosclerosis. He has developed an empirical formula with the effects of transforming phlegm, promoting blood circulation, detoxifying and unblocking meridians. While applying this prescription for treatment, it is necessary to also focus on

educating patients to improve their lifestyle and self-psychological counseling. Treating CAS based on the theory of phlegm, stasis and toxicity gives full play to the advantages of traditional Chinese medicine in the treatment of carotid atherosclerosis, which will help broaden our thinking on disease intervention and provide a new treatment strategy for clinical treatment of carotid atherosclerosis. To sum up, the theory of phlegm, stasis and toxicity can be used as an entry point for the treatment of carotid atherosclerotic plaques to conduct more in-depth and larger sample size clinical studies and provide sufficient evidence for its clinical efficacy.

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