

Discussion on prevention and treatment of ischemic stroke from the phlegm-dampness constitution

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Abstract: In recent years, ischemic stroke (CIS) incidence as well as mortality has increased year by year and has a trend of more youthful, which seriously threatens our national health and is one of the current key diseases to prevent and treat. Studies have shown that sputum-dampness constitution has the pathological characteristics of metabolic syndrome, vascular endothelial dysfunction as well as blood flow changes, and is a risk population for CIS. Therefore, it is of great clinical significance to carry out phlegm-dampness constitution identification and establish an individualized diagnosis and treatment protocol, which can advance the prevention and treatment of CIS. In this paper, based on the Chinese constitutional theory and combined with the theory of preventive treatment of disease, it is believed that the prevention and treatment of CIS should be based on the principle of "no phlegm to prevent phlegm, there is phlegm to remove phlegm", the appropriate regulation and treatment plan should be selected at different stages of CIS without onset, already onset and recovery after illness, choose suitable treatment methods, and try to do so to regulate the constitution to prevent disease occurrence, regulate the constitution to prevent disease occurrence change, and regulate the constitution to prevent disease recurrence, so as to provide new ideas and practical interventions for the prevention and treatment of CIS.

1. Introduction

Cerebral ischemic stroke (CIS), also known as ischemic cerebrovascular disease or cerebral infarction. It is a kind of clinical syndrome caused by cerebral ischemia and hypoxia due to cerebral vascular disease, which leads to brain tissue necrosis and softening, accompanied by hemiplegia, aphasia and other neurological function loss [1]. CIS belongs to the category of "stroke" in traditional Chinese medicine (TCM) and is characterized by sudden faintness, unconsciousness, hemiplegia, stiff tongue, dysphasia or aphasia as the main clinical manifestations [2]. With the characteristics of high morbidity, mortality, disability and recurrence rate, it seriously threatens the national health of China, and is currently a disease that is focused on prevention and treatment.

Traditional Chinese medicine (TCM) holds that the constitution is both relatively stable and dynamically variable, and by correcting the biased constitution, it can reduce the body's vulnerability to a certain disease and thus prevent the occurrence of disease; Aiming at different constitutional types, combining distinguish constitution with dialectic can establish individualized treatment

principles, resulting in accurate, comprehensive and effective treatment outcomes [3]. With the enactment and implementation of the nine constitution type classification as well as the classification and determination of the constitution of traditional Chinese medicine (TCM), to deeply explore the relationship between constitution and disease, based on the principle of constitution to formulate prevention and treatment, the selection of corresponding prevention, health maintenance and treatment methods has become a research hotspot. Studies have shown that phlegm-dampness constitution has the lesion characteristics of metabolic syndrome, vascular endothelial dysfunction as well as blood flow changes, and is closely related to the occurrence of CIS. Therefore, starting from phlegm-dampness constitution to prevent and treat CIS is of great clinical significance.

2. Correlation between phlegm-dampness constitution and ischemic stroke

Phlegm-dampness constitution refers to the condensation of phlegm-dampness due to the stagnation of water, and the main characteristics of phlegm-dampness manifestations such as body obesity, abdominal fatness and sticky mouth [4]. It is the background of a variety of cardiovascular and cerebrovascular diseases. Based on the etiopathogenesis of ischemic stroke, epidemiological investigation as well as microcosmic morbidity mechanism, it is believed that phlegm-dampness constitution has a significant correlation with ischemic stroke and is the pathological basis of its occurrence.

2.1 Sputum-dampness constitution is the main morbidity constitution of CIS

Traditional Chinese medicine (TCM) considers that the differences in the constitution of individuals can lead to the susceptibility of individuals to some pathogenic factors, or to the susceptibility, predisposition to some diseases [5]. Modern clinical studies have shown that phlegm-dampness constitution is the "common soil" for the occurrence of many diseases, such as cardio cerebrovascular disease [6], metabolic [7] as well as endocrine [8]. In recent years, there has been an increasing amount of research focused on the relationship between CIS and the type of TCM Constitution, and several studies have confirmed that CIS and sputum-dampness constitution have an obvious correlation [9]. Li Jin [10] identified the TCM Constitution of 183 patients with CIS based on Prof. Wang Qi's constitution nine classification method, and the results showed that the constitution type of CIS patients was dominated by phlegm dampness, blood stasis, and Qi deficiency, among which phlegm dampness accounted for 27.3%, residing first; Zhen Xiaomin et al [11] showed that the correlation between TCM constitution type and CIS in 237 patients with CIS showed that sputum dampness constitution was closely related to the onset of CIS, and sputum dampness had the largest or contribution value compared with traditional stroke risk factors. Zhou Han et al [12] investigated TCM Constitution and related risk factors in 303 patients with acute cerebral infarction and found that patients with phlegm dampness constitution who had risk factors of CIS such as heart disease, diabetes mellitus, and hypertension had a greatly increased risk of CIS compared with the plain and qualitative population. In conclusion, it is known that phlegm-dampness constitution is the main constitutional types of CIS, and prevention and treatment of CIS must first opsonize phlegm-dampness constitution.

2.2 Phlegm-dampness constitution is the pathological basis of CIS

CIS is a common neurological disorder with a complex etiology and is affected by many factors, and it is currently considered that metabolic syndrome, represented by obesity, diabetes, hypertension, hyperlipidemia, etc., is a risk factor, and vascular endothelial dysfunction as well as hemodynamic abnormalities are the main causes of the disease. Clinical findings, sputum wet body has the lesion

characteristics of metabolic syndrome, vascular endothelial dysfunction as well as blood flow changes, and it is believed that sputum-dampness constitution is the pathological basis of a variety of cerebrovascular diseases. Therefore, the occurrence and development of CIS can be prevented by regulating body constitution.

2.2.1 Sputum-dampness constitution and metabolic syndrome

Metabolic syndrome (MS) refers to a complex syndrome in which the metabolism of substances such as protein, fat, and carbohydrate is disturbed in the human body, and the organism develops a complex syndrome in which many risk factors, such as obesity, hyperglycemia, and hypertension, as well as dyslipidemia, combine. It is not only a major risk factor for multiple cardio cerebrovascular diseases, but also the key to prevent and treat related diseases. Studies have shown [13] that the risk of stroke in MS patients is more than twice that of non MS patients, and its incidence is increasing with increasing risk factors. Zhao Yuwei [14] through the clinical investigation of 300 patients with MS, the results showed that sputum-dampness constitution accounts for 43.7% as the main constitution type of MS, and compared with other body mass patients, sputum-dampness constitution's blood fat levels are significantly higher and are more likely to trigger stroke; In addition, lifestyle survey showed that obesogenic and overeating as well as history of tobacco and alcohol consumption accounted for the highest proportion of phlegm-dampness constitution, which may be the main reason for forming phlegm-dampness constitution and inducing Ms. Clinical studies have shown [15,16] that by applying traditional Chinese medicine (TCM) health management such as diet, exercise, emotional conditioning as well as acupuncture to patients with sputum dampness body, it can effectively reduce the degree of sputum dampness in patients with sputum dampness body, reduce blood glucose, blood pressure and blood lipid levels, and improve body metabolic disorders. Therefore, early intervention to correct physical bias in patients with phlegm-dampness constitution can reduce the risk of CIS.

2.2.2 Sputum-dampness constitution and vascular endothelial dysfunction

The vascular endothelium, a layer of mononuclear cells intermediate between the plasma and the tissue of the vascular wall, is an important barrier to guarantee the metabolic exchange of plasma and tissue fluids. The intact endothelium plays an important role in maintaining vascular tone, regulating blood pressure, maintaining the patency of blood vessels and normal flow of blood. Endothelial dysfunction is involved throughout the development of atherosclerosis and is a key link in its formation [17]. Studies have shown that sputum-dampness constitution presents the propensity of both insulin resistance, lipid metabolism as well as disorders of purine metabolism in the undiagnosed state [18], and considered that they are risk factors for the formation of atherosclerosis caused by vascular endothelial dysfunction induced by phlegm-dampness constitution. For example, patients with sputum-dampness constitution have decreased serum levels of HDL-C and increased levels of TC, TG, and LDL-C [19]. The elevation of blood lipids and cholesterol can directly induce endothelial cells to undergo oxidative stress and inflammatory reactions, resulting in endothelial dysfunction [20]; While insulin resistance can induce NOx activation to produce a large amount of oxygen free radicals and inhibit the activation of eNOS [21], thus aggravating endothelial function injury and accelerating the formation of atherosclerosis. If the cerebral artery is involved, it can cause cerebral ischemia and CIS. It is currently believed that atherosclerosis is a major cause of CIS, so that for people with phlegm-dampness constitution who have atherosclerotic lesions, the occurrence of CIS can be prevented by adjusting body constitution.

2.2.3 Sputum-dampness constitution and blood rheology changes

Modern medicine considers blood rheology changes as an important factor in the pathogenesis of CIS, which can be used as an early warning of CIS disease. The rheology of blood is often abnormal in cis patients, which is manifested by an increase in the tangible components of blood such as lipoproteins, cholesterol, and fibrin, an increase in the viscosity of plasma, a slowing of blood flow rate, or thrombosis, ultimately leading to cerebral tissue ischemia and hypoxia injury [22]. Clinical studies have confirmed [23] that there are microcirculation disorders in people with phlegm-dampness constitution, whose blood is in a hypercoagulable state of "" concentrated, sticky, polymerized, and coagulated "", with a tendency of pathological changes of stasis clamping, which also supports the view that the phlegm-dampness constitution is "" stagnation in phlegm "". Ni Juemin et al [24] investigation and analysis of TCM physical characteristics of 300 patients with impaired cerebral blood vessels, and the results showed that sputum-dampness constitution accounted for 28.33%, ranking first, and compared with other physical patients, patients with sputum-dampness constitution had lower blood flow velocity and larger blood viscosity in the right cerebral vessel. Yao Wei et al [25] demonstrated that the viscosity of whole blood and the platelet aggregation index were significantly decreased in the group treated with Di Tan Tang combined with buphthalein soft capsules compared with the reference group by studying 116 patients during the recovery period of phlegm stasis blocking collaterals type cerebral infarction, which confirmed that Di Tan Tang can significantly regulate the hemodynamics and prevent the blood of patients with phlegm syndrome from developing into a hypercoagulable state. Shang Xuezheng [26] by using Banxia Baizhu Tianma Decoction plus minus formula to treat 25 patients with wind phlegm Blocking Collaterals type CIS with atherosclerotic plaques, concluded that this decoction can reduce atherosclerosis and whole blood viscosity of CIS patients, inhibit thrombosis, and effectively improve cerebral circulation status. Traditional Chinese medicine (TCM) holds that phlegm turbidity is both a pathological product and a pathogenic factor, its heavy turbidity and its greasy nature, if blocking the channels, the retarded blood flow is stagnant and the phlegm stasis is mutual. This disease occurs when the brain collaterals is not accessible, which is consistent with the abnormal blood rheology considered in modern medicine. So for the sputum of CIS patients, sputum opacity and closure resistance are the basis of its lesions, and Sputum Stasis interaction is an important disease mechanism change, when clinical treatment should pay attention to this pathological product of stasis, and proper addition of blood activating drugs while regulating body constitution treatment may enhance the therapeutic effect.

3. Prevention and treatment of CIS by regulating sputum-dampness constitution

3.1 Prevention disease before disease onset, regulate constitution to prevent disease

Regulateing constitution to prevent disease refers to using a variety of conditioning methods when the disease has not occurred, to correct the constitution biased, so as to prevent the occurrence of disease, and prevent it from the disease. Innate endowment is the inner basis of sputum-dampness constitution formation, and poor lifestyles such as indiscriminate diet, emotional inflexibility, and malaise are important reasons that promote its formation. With the improvement of people's living standard, the diet structure has gradually changed from the traditional cereals to the pattern of high sugar, high fat and high protein. The nature of the work gradually changed from the original physical labor to mental labor, long-term desk work, sedentary, will lead to spleen health loss. In addition, people generally live under great pressure now. If emotions cannot be discharged normally, emotional disorders will cause liver dysfunction and cross the spleen, which will eventually affect the transportation of middle jiao, resulting in endogenous phlegm and dampness [27]. On this basis, CIS can be easily triggered if emotional stimulation, climate change and other incentives are encountered. Therefore, phlegm-dampness constitution, as a risk group of CIS, should be kept healthy to prevent disease when not sick, especially especially to pay attention to the change of lifestyle. In daily life,

we should oppose bad eating habits such as overeating, gluttony, excessive drinking and so on. We should advocate the scientific model of regular and quantitative meals, balanced nutritional intake, light diet taste, and quitting alcohol. In the diet, we should choose some foods such as yam, Job's tears, winter melon, white lentil, etc. that strengthen spleen and moisten and ease three-jiao. In terms of sports health care, high-intensity strenuous exercise should be avoided, and outdoor aerobic exercise should be selected, such as walking, jogging, dancing, Taijiquan, Baduanjin and other low-intensity sustained energy consumption exercise, with slight sweating is appropriate. In terms of emotional management, patients should try to avoid bad mental stimulation and excessive mood swings, participate in social activities, learn to rationally vent bad emotions, and maintain a good mental state and moods. The living environment should be kept dry and airy, the clothes should be soft and breathable at ordinary times, and the clothes should be exposed to the sun frequently [28]. When necessary, the prescription for strengthening spleen and eliminating phlegm and dampness can be used to improve the pathological constitution and eliminate the internal factors of the occurrence of diseases. The commonly used drugs include codonopsis, yam, white art, Tuckaia, orange peel, Perilla seed, white mustard seed, etc. Representative prescription agents are Shenling Baizhu San, Zexie Baizhu San, invigorating phlegm and removing dampness recipe, etc. Individuals with underlying pathologies such as diabetes, hyperlipidemia, and hypertension should also be monitored to keep their blood glucose, lipids, and blood pressure in an ideal range. In addition, we can cooperate with preaching and conduct health education through hospitals, communities, and the mass media to help the masses master knowledge about the disease prevention care of CIS and establish a health concept, so as to achieve disease prevention.

3.2 Early treatment of disease, adjust constitution to prevent disease change

Adjusting the constitution to prevent disease change means that after the occurrence of the disease, actively take measures to strive for early diagnosis, combined with the method of discriminative constitution for early treatment, to prevent the further development and transmission of the disease. Phlegm turbidity blocking the vein is an important pathogenesis of CIS. Fat people with excessive phlegm, or induced by wind evil, or excessive phlegm dampness, or phlegm stasis turns heat, or phlegm-blood stasis, can all lead to cerebral pulse occlusion and lead to CIS. Therefore, for patients with phlegm-dampness constitution in the acute stage of the disease, the nature of phlegm syndrome and the depth of the disease location should be distinguished and corresponding treatment methods should be given respectively.

3.2.1 Dispelling wind, reducing phlegm and dredging collaterals

Synopsis of Golden Chamber points out: "Evil lies in collaterals, numbness of the skin" The "evil in collaterals" here is a pathological change in the early stage of stroke. The patient disease is shallow and mild. For patients with phlegm-dampness constitution, it may be due to external evil inducing latent phlegm in the body, or emotional upset lead to liver wind with phlegm, or prolonged phlegm compounded by diet, mood, and trouble, resulting in wind and phlegm two evils together lead to the occurrence of disease. Phlegm is a visible evil. If it is blocked in the collaterals and affects the movement of Qi and blood, and the collaterals are lost in the nourishing, it can be seen that numbness. In the skin and hands and feet. If phlegm flows with wind evil, flow meridians, blood blocked, qi and blood impassability, it can be seen that hemiparalysis, hands and feet contracture, tongue stiffens, slobbering and other symptoms. For such patients with wind phlegm into collaterals, treatment should be based on dispelling wind, reducing phlegm and dredging collaterals, and Zhenfang Baiwanzi San is used as the representative formula.

3.2.2 Inducing resuscitation and eliminating phlegm

The acute phase of stroke often sudden onset, along with meridian into the viscera can appear blockage syndrome, at this time the disease is deeper, the condition is more serious, manifested as sudden fainting, unconsciousness, trismus, grip with both hands and other symptoms of phlegm turbid closing the orifice. Phlegm-dampness constitution patients with latent phlegm in the body, acute onset often into, so the onset is mostly closed syndrome. Because this stage of the evil is overpowering, the disease is the standard urgent this slow, so should use "drastic medicine urgent removal", the evil removal of the brain pulse is through, Qi and blood get flat. Because the nature of phlegm is divided into phlegm heat and phlegm dampness, so there are different syndrome type of Yin and Yang, the treatment is always the first to induce resuscitation and eliminate phlegm. Yang syndrome is treated with Lingjiao Gouteng Decoction combined with Zhibao Dan. Disitan Decoction and Shexiang pills are commonly used to treat Yin syndrome.

3.2.3 Reducing phlegm and bowel-relaxing to relieve heat

Constipation is one of the common symptoms of CIS, mainly due to the phlegm-heat accumulates in the middle energizer and heat burning body fluid. If fu Qi is not smooth, turbid qi disturbs the mind, it will aggravate the condition. Therefore, the appropriate treatment of phlegm Tongfu heat, on the one hand can smooth the fu-qi, access the meridians, transport qi and blood, in order to relieve symptoms; In addition, it can overcome the tendency of Qi and blood reversal and prevent internal closure [29]. At the time of treatment, xinglouchengqi decoction was used as the representative formula.

3.2.4 Invigorating spleen and dissipating phlegm

Phlegm-dampness constitution people mostly because of excessive greasy and surfeit flavour leads to spleen and stomach damage, transport weakness. If phlegm dampness internal dampness and stagnation block the choroid, CIS can also be triggered, the symptoms are dizziness and gaseous distention, etc. Although the onset of this syndrome is similar to the wind phlegm entry collaterals, it is responsible for the etiology of spleen deficiency caused by dampness internal dampness, therefore, it is advisable to invigorate spleen and turn out phlegm, and use Er Chen decoction as a representative formula.

3.3 Adjusting constitution after recovery and prevents disease recurrence

After rescue treatment in the acute stage of CIS, the patient became alert, eating slightly and gradually entered the recovery period, but mostly left with varying degrees of sequelae such as hemiplegia, eye deviation, slurred speech or aphasia, at which point he still needs active treatment and enhanced daily care. For patients with a wet sputum constitution in the recovery phase of CIS, sputum is the primary pathological factor; Phlegm stasis is the main disease mechanism that leads to the dysfunction of movement, language, swallowing, sensation, as well as cognition, for which deficiency and dampness of spleen are the main constitutional features. Therefore, drugs such as *Atractylodes Atractylodes macrocephala*, *Poria cocos*, coix seed, yam, and *Glycyrrhizae Radix* are commonly used to invigorate spleen and invigorate Qi dampness; And compatibility of medicines such as Tao Ren, Honghua, Danggui, chuanxiong, and Niu knee, to invigorate blood and invigorate blood and remove blood stasis and to cure the disease, so as to improve the Constitution and achieve the purpose of preventing secondary stroke by removing pathological factors. In addition to adjusting medication, daily care should be strengthened, and besides general lifestyle conditioning such as diet, environment, and exercise, multiple rehabilitation training such as language, swallowing, and limb

exercise should be strengthened; For bed ridden patients, it should be done to do commuting turn over to prevent the generation of decubitus ulcers and remove phlegm and saliva timely to prevent asphyxia and pulmonary infection, while cooperate with many therapies such as acupuncture, Tuina, massage, and Chinese herbal smoked washing to prevent various complications, prevent the recurrence of the disease, and improve the quality of patient survival.

4. Conclusion

Sputum-dampness constitution is the pathological basis of CIS and is its main morbidity population. CIS can be prevented by improving the life style, regulating the constitution and preventing the production of phlegm evil when the disease does not occur. Diagnose and treat diseases early when they occur. The combination of body differentiation and syndrome differentiation, seize the pathogenic factor of phlegm, or dispelling wind, reducing phlegm and dredging collaterals, or inducing resuscitation and eliminating phlegm, or reducing phlegm and bowel-relaxing to relieve heat, or invigorating spleen and dissipating phlegm to prevent further disease deterioration; When entering the recovery period, it is still necessary to prevent sputum and treat sputum first, and pay attention to daily care to prevent the recurrence of the disease and improve the quality of life of patients. Therefore, under the guidance of the theory of preventive treatment of disease, starting with conditioning phlegm-dampness constitution to prevent CIS is of great significance, and is the key point of personalized diagnosis and treatment in traditional Chinese medicine.

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