

结合病理生理机制探讨动脉硬化之中医疗护原则

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摘要:动脉硬化是心血管疾病的主要危险因素。糖化终产物则是导致动脉发生硬化的原因之一,它使得动脉基质中的胶原蛋白产生交互连结,造成动脉壁延展性降低而导致动脉发生硬化。糖化终产物的形成,与氧化压力有很大的关系,而氧化压力又与生活中压力所导致的情志不畅,以及饮食型态、生活习惯有关。对于动脉硬化,中医的治疗与护理原则多以活血化瘀、软坚散结为主,依据辨证的基础,给予相应的治疗及护理措施。

关键词:动脉硬化;糖化终产物;氧化压力;中医治疗与护理

中图分类号:R256.2 **文献标志码:**A **文章编号:**1672-0482(2019)03-0356-05

DOI:10.14148/j.issn.1672-0482.2019.0356

引文格式:庄昆翰,庄曜祯.结合病理生理机制探讨动脉硬化之中医疗护原则[J].南京中医药大学学报,2019,35(3):356-360.

To Investigate the Guideline of Traditional Chinese Medicine Therapy and Care on Arterial Stiffness from the Point of Pathophysiologic Mechanism

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ABSTRACT: One of the major risk factors for cardiovascular disease is arterial stiffness. There are several mechanisms associated with the development of arterial stiffness, including the involvement of advanced glycation end products. Arterial stiffness results from altered distensibility of arterial walls and is associated with advanced glycation end product-related cross-linking of collagen in the artery matrix. Oxidative stress is associated with advanced glycation end products formation and triggered by moodiness, feeding mode, and lifestyle. In TCM and care, the major treatment for arterial stiffness includes activating blood, resolving stasis, softening hardness, and dissipating binds. Depending on the particular syndrome, variations on these major approaches to TCM therapy and related auxiliary nursing care are applied.

KEY WORDS: Arterial stiffness; Advanced glycation end products; Oxidative stress; Traditional Chinese Medicine Therapy and Nursing

1 Arterial stiffness

Arterial stiffness (AS) not only represents reduced compliance of large arteries but has also been recognized as a powerful predictor of cardiovascular events and all-cause mortality in the general population and patients with hypertension^[1]. There are two major types of AS: atherosclerosis and arteriosclerosis. The main characteristic of atherosclerosis is thickening of the intima and media in the arterial walls. The thickness of arterial walls is caused by a gradual increase in the deposition of plaque, which consists of lipids, chole-

sterol, calcium, and clumps of platelets, hence resulting in a narrowing of the vessel lumen or complete blockage of the artery. The occlusion of the vessel could cause ischemia diseases, including myocardial infarction and stroke^[2-3]. Arteriosclerosis is another condition that refers to stiffness of the vessel walls due to loss of elasticity in the arterial musculature and is a result of age, diabetes, and chronic kidney disease. The elastic arteries would be highly resistant to the turbulence of blood flowing under high pressure. When the arteries become harder and thicker, the resistance to blood

收稿日期: 2018-04-23

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flow will be increased and the blood pressure will rise^[4].

There are several mechanisms associated with the development of AS. One of these, the accumulation of advanced glycation end products (AGEs), has been shown by many studies to play a significant role in AS^[5]. AGEs are a complex and heterogeneous group of compounds formed over a long term in parallel and sequentially by nonenzymatic Mailard reaction. Long-lived proteins, such as collagen, are affected by the glycation process, and ultimately form covalent crosslinks that contribute to vascular stiffening^[6]. AGE formation is related to oxidative stress, which is associated with moodiness, dietary pattern, and lifestyle, and subsequently results in AS^[5]. Our previous studies have also demonstrated that effective amelioration of AS would be caused by the inhibition of oxidative stress^[7].

2 TCM therapy

In traditional Chinese medicine (TCM), there are two main categories of AS treatment: prophylactic measures and formal remedy. The standard practice in TCM relies on treating the patients with the firm observation of the fundamental principle of “treatment based on syndrome differentiation” in TCM theory. In the early phase of AS, patients may remain relatively asymptomatic and the syndrome cannot be differentiated for treatment. However, according to the TCM theory of “treating pre-disease,” we know that improper diet, emotional maladjustment, and careless living are related to AS^[8]. Therefore, we can administer preventive medicine for the gloomy mood in the preventive stage. Once the status of AS in patients begins to worsen to the point where the physical symptoms can be detected, we can execute treatment based on syndrome differentiation. According to the degree of AS, the respective principles for treatment are as follows.

2.1 Evaluating the state of illness before symptoms appear

Provided that there are no obvious symptoms in patients, AS is very difficult to detect. However, according previous literature, if the patient's emotions are unstable due to high emotional stress or great anger, this might contribute to an increased risk of AS, along with its trigger, oxidative stress. The seven emotions, including joy, anger, anxiety, thought, sorrow, fear, and fright, are external manifestations of mental activity, and moodiness would have harmful influences on the human body, which causes serious yin-yang and qi-blood disharmony, and meridian and collateral obstruction. All of these syndromes can be explained by moodiness and qi movement, which is blocked in TCM. Therefore, TCM doctors can associate syndrome occurrence with symptoms and the patients' chief complaints, and administer

the proper medical therapy. Symptoms such as agitation, irritability, chest tightness, and hypochondriac pain are due to liver qi depression syndrome, therefore, the principle of treatment would be inclined to soothe the liver and relieve depression and move qi to melt stagnation. The clinical treatment of TCM usually applies some formula to soothe the liver and relieve depression, such as xiaoyao powder or Shugan Huoxue Tongbi powder^[9], along with some herbal medicine that would be able to move qi to melt stagnation, such as green tangerine orange peel (*Pericarpium citri reticulatae viride*), nut grass flatsedge rhizome (*Rhizoma cyperi*), and a drug to promote blood circulation in the qi, such as zedoary (*Rhizoma zedoariae*), turmeric (*Curcuma longa*), or a drug to promote qi movement in the blood, such as chuanxiong rhizome (*Rhizoma ligustici chuanxiong*), and curcuma root (*Radix curcumae*). Otherwise, the meridian and collateral acupuncture points, which are able to soothe the liver and relieve depression, can also be located and acupuncture, moxibustion, or massage can be used to maximize the effect of treatment. Commonly applied acupoints are Tai chong point (LR3) in the liver meridian of foot-jueyin and Yang ling quan point (GB34) in the gallbladder meridian of foot-shaoyang. Attacking these two acupoints would soothe the qi of liver and relieve depression^[10].

2.2 The symptoms of paralysis and coolness in the extremities

A frequent cold appearance to the extremities and even paralysis could mean deterioration of the peripheral circulation. There are various factors that cause poor peripheral circulation: one such risk factor is AS, which could be related to a rise in blood flow resistance, and result in paralysis of the extremities due to local perfusion deficiency. This symptom was classified to impediment disease in TCM, and the mechanism of disease is internal obstruction of static blood or qi stagnation and blood stasis. Huangdi Neijing - Suwen mention that the disablement will be heavy due to paralysis of the bone and stasis due to paralysis of the vessel^[11]. Therefore, the treatment principle for poor peripheral arterial circulation involving arthralgia and vessel impediment usually uses methods to activate the blood, resolve stasis, and move qi to free the collateral vessels. In clinical therapy, the formula of xuefuzhuyu decoction Buyanghuanwu decoction are commonly used in conjunction with effective Chinese medicines to activate blood, move qi, and relieve pain^[12-13], such as corydalis tuber (*Rhizoma corydalis*), red sage root (*Radix salviae miltiorrhizae*), frankincense (*Resina olibani*), and myrrh (*Myrrha*)^[14]. Modern medical research has dem-

onstrated that these Chinese medicines could not only cause vasodilatation and improve circulation but also had antioxidant capacity^[15]. Furthermore, supplements to Chinese medicine of soften arterial hardness and dissipate binds, such as sargassum (*Sargassum*), Japanese sea tangle (*Thallus laminariae*) and oyster shell (*Concha ostrea*), were able to retard the AS that occurred due to arthralgia caused by blood flow obstruction and static blood^[16]. In acupuncture and moxibustion therapy, the acupuncture points are chosen according to the location of lesions and course of the meridian. For example, the acupuncture point Quchi point (LI11) and Huantiao point (GB30), Hegu point (LI4), Chize point (LU5), Yanglingquan point (GB34) and Weizhong point (BL40) can be used to activate blood, move qi and resolve stasis^[17].

2.3 Ischemia, pain, and even necrosis in the extremities

Obstruction of the circulation might lead to local tissue necrosis in the area without blood perfusion. Generally, AS will be initiated from peripheral vessels because adverse effects of sclerosis are marked at arterioles compared with large arteries, and lead to further arterial occlusion. In atherosclerosis of the lower extremities, there will form atheromatous plaque in the intima of arteries. At the same time, arterial medial remodeling results in secondary thrombus and causes angiostenosis. The decreased vessel lumen diameter even causes arterial occlusion. These pathological changes could exhibit lower extremities ischemia, pain, intermittent claudication, non-healing extremities, ulcer, and even necrosis of the extremities^[18]. There are categories of digital gangrene in TCM, and the symptoms of cold, paralysis, pain, necrosis, and dactylolysis are due to collateral vessel stasis. The common TCM syndromes are vessel stasis and cold-dampness obstructing the collaterals. The primary mechanism of pathogenesis is spleen-kidney deficiency in the root and cold-dampness injury in the tip. Combined internal and external pathogens lead to congealing and stagnation of qi and blood, and meridian vessel stasis^[19]. Therefore, the guidelines for therapy should be based on stasis, deficiency, and cold, to choose the therapeutic principle including warming yang for dispersing cold, activating blood, and resolving stasis and free the collateral vessels to relieve pain. In clinical therapy, the formula of yanghe decoction and Taohong siwu decoction is commonly used, in conjunction with Chinese medicines effective in the activation of blood to free the collateral vessels, such as earthworm (*Lumbricus*), frankincense (*Resina olibani*), and myrrh (*Myrrha*)^[20]. In acupuncture and massage, the acupuncture point is chosen ac-

ording the site of pathogenesis and the course of the meridian to carry out acupuncture therapy to flow without obstruction in qi and blood of the meridian. The acupoints that are usually used to unblock the meridian and activate collaterals, such as Quchi (LI11), Weizhong (BL40), and Xialian (LI8), could treat painful impediments. Hegu (LI4), Taichong (LR3) can also be chosen to activate blood, move qi, dissipate stasis, and diffuse impediments. Furthermore, the Yanglingquan (GB34), Fenglong (ST40), Xuehai (SP10), and Sanyinjiao (SP6) could increase the effectiveness of blood activation and diffuse impediments and tonics for deficiency, as well as dissipate cold in order to treat digital gangrene of the lower extremities^[17].

3 TCM nursing

With the development of TCM, TCM nursing has gradually been taken seriously worldwide. Many medical organizations and educational institutions are active to promote TCM nursing. TCM nursing possesses characteristics and advantages including plentiful knowledge of TCM and nursing technology. TCM possesses powerful practicability in clinical nursing care, because it combines TCM holism with the theory of syndrome differentiation and nursing care to emphasis the principle of "Prevention is better than cure". Therefore, the practice of TCM nursing is beneficial to patients' health promotion.

In the previous presentation, we learned that several factors might be related to AS, including negative emotion, stress, and irregular lifestyle. In order to maintain the patients' harmonious physio-psychological state or to keep the best conditions for therapy, mood, diet, and lifestyle could be combined with the intervention and care of TCM nursing to achieve the goal of preventing disease or deterioration.

3.1 Mood care

The excess of seven emotions were injury to the viscera, bowels, qi, and blood, which could be caused by qi stagnation in the meridian and blood stasis, and develop into AS or arterial occlusion. However, mood care would be beneficial to relieve progressive arterial deterioration in patients. This theory is identical to psychotherapy of modern medicine in the sense that it could decrease the bodily injury caused by sympathetic nerve hyperactivity or hypersecretion of cortisol due to moodiness^[21].

For those patients who have potential risk factors of AS, such as diabetes or chronic renal failure, mood nursing could be administered according the theory of holism and syndrome differentiation and nursing care of TCM. The principle of nursing care must be based on different patients and

different conditions to offer various kinds of nursing, such as empathy and relieve melancholy. When the patients focus excessively on their disease, there usually tends to emerge a negative mentality that resulted from patients' anxiety, and lead to liver qi depression syndrome. In order to achieve the purpose of soothe liver and regulate qi, the doctor should take proper measures and treatment to divert their attention from the disease itself, in order to relieve the undue depression and negative mentality of the patients. It needs to be emphasized that those treatments vary with the individual: doctors and nurses need to study their hobbies and interests in the process of communication with the patients, then help them to remove the anxiety and develop their beneficial entertaining activities, such as playing chess, listening to music, or reading.

3.2 Nursing for diets

As we all know, "blood stasis due to qi stagnation" and "cold-dampness obstructing the collaterals" are the main features of the pathogenesis of arteriosclerosis, which could comprehensively be called spleen-kidney depletion syndrome in TCM. In aspects of dietary nursing, some encouragements to consume more foods that can tonify the spleen and benefit the kidney are quite necessary^[22], such as the following: Shanyao (*Rhizoma dioscoreae*), lotus seed (*Semen nelumbinis*), Yiyiren (*Semen coicis*), Gordon euryale seed (*Semen euryales*), walnut kernel (*Semen ouglandis*), Chixiaodou (*Vigna umbellata*) or pigs kidney, green mussels, loach, and trepang. In addition, it can be eaten along with the vegetables that can soothe the liver and regulate qi or activate blood and free the collateral vessels, such as edible tree fungus (*Auricularia auricula-judae*), loofah (*Luffa cylindrical*), spinach (*Spinacia oleracea*), and aubergine (*Solanum melongena*). Otherwise, having some fruits such as grapes and berries, or drinking an appropriate amount of red wine would be permissible (below 30 mm/day). The reason why these foods and drinks are preferable to relying only on their unique substance, resveratrol, is that they would greatly lower the incidence rate of AS^[23]. Uncooked and cold food, as well as fattening food should be strictly prohibited to prevent the patient from experiencing more serious blood stasis due to qi stagnation and congealing cold.

3.3 Carefor patients in their personal lives

Patients should adapt to climate change and the changing of the seasons, keeping a normal life pattern. Try to avoid staying up late at night and quit smoking and alcohol drinking. Remember to stay away from unnecessary qi and blood deficiency by keeping your accommodation in the efficient

light and avoid damp, dark environments. In order to help patients to elevate their mood, to achieve moving qi and activate the blood, proper and appropriate exposure to the sun would be encouraged, as well as leisure activities and something relaxing^[24]. However, there are several notices to which one should pay close attention, as follows: ① strenuous exercise should be prohibited to prevent the patients' physical bodies from producing oxidative stress; ② patients who are suffering from the serious disease "congealing cold with blood stasis" should pay particular attention to nerve inflection caused by wind-cold, and thus prevent the worse state of disease, more severe blood vessel stasis, from occurring. Because their peripheral circulation is in a state of disorder, they usually get cold hands and feet or limb numbness. The doctor can advise them to bathe their feet in warm water frequently to alleviate the coldness in the feet and to activate the blood, freeing the collateral vessels as well^[25].

4 Conclusion

In recent years, the concept of in "promotion of the practice of health" has been gradually accepted by the Chinese citizens. At the same time, we pay great attention to AS, which can cause cardiovascular disease. In TCM, "prevention treatment" can perfectly reflect the theory that prevention is better than cure. Based on the general theory in TCM with full performance of "treatment individualized to patient, season, and locality" for the purpose of "prevention before disease onset and from exacerbation", we should not only study mainly emotional therapy, which is concerned with the psychological state of patients, but should also provide proper individual diets and care for the patients' activities in daily life on the basis of principle "syndrome differentiation and treatment" in TCM^[26].

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(编辑:陈军 董宇)