

Research Progress of Traditional Chinese Medicine Formula Yiqi and Muscle Building Decoction and Carcinogenic Sarcopenia

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Abstract: Sarcopenia is a progressive, generalized syndrome characterized by decreased skeletal muscle content and decreased function. Patients with malignant tumors can develop sarcopenia at different stages of progression, with an incidence of 32.05%~70.40%, and the prevalence varies according to tumor type, stage, and measurement method. Compared with other types of tumors, the incidence of sarcopenia in patients with digestive tract tumors is higher, 17%~78%. In this paper, the PI3K/AKT/mTOR pathway was used to explore the mechanism of Qi Strengthening Decoction in the intervention of sarcopenia in patients with advanced esophageal cancer, in order to provide a method for the clinical treatment of sarcopenia.

Keywords: Esophageal cancer, Sarcopenia, Traditional Chinese medicine, Energy metabolism, PI3K/AKT/mTOR

1. Introduction

As of 2015, a total of 478,000 patients have been diagnosed with esophageal cancer, and the number of deaths has reached 375,000, and early esophageal cancer is difficult to diagnose, most of them are advanced when diagnosed, and its 5-year survival rate is only 18.8%, which has become the fourth leading cause of death of tumors in China^[1]. Sarcopenia is a common complication of esophageal cancer with the highest incidence of 12%~78%^[2], insufficient muscle reserve, decreased resistance, thereby increasing surgical risks, postoperative complications and mortality, affecting the clinical outcome of patients, so prevention and early intervention of EC patients with sarcopenia is very important.

2. Modern medical understanding of tumor-related sarcopenia

Sarcopenia was first proposed by Rosenberg in 1989 to describe age-related disease states in which skeletal muscle mass and strength are reduced and body activity is reduced. With the deepening of the study of skeletal muscle metabolism, people's understanding of sarcopenia is no longer limited to the age level, but extends to tumors, inflammation, hormone levels, nutritional status, chronic wasting diseases and even the gene level. Sarcopenia is more common in tumor patients, accounting for 32.05%~70.40%, and compared with other tumors, the incidence of sarcopenia in gastrointestinal tumors is higher^[3-4]. In recent years, several studies have found that sarcopenia is an independent risk factor for postoperative complications, chemotherapy toxicity, adverse reactions and poor prognosis in cancer patients, and has important predictive value for prognosis^[5-6].

2.1 Pathogenesis of tumor-associated sarcopenia

There are many factors in the pathogenesis of tumor-related sarcopenia, including degeneration caused by age and other reasons, insufficient nutritional intake, lack of physical activity, tumor-related factors and antitumor therapy. The molecular mechanisms involved include oxidative stress and mitochondrial dysfunction, protein synthesis/degradation imbalance, etc.

2.1.1 Oxidative stress and mitochondrial dysfunction

Elevated levels of reactive oxygen species (ROS) in blood and tissues are one of the early biomarkers of oxidative damage in the body. The three indexes of superoxide dismutase (SOD) and reducing glutathione peroxidase (GSH-PX) activity and malondialdehyde (MDA) content can reflect the oxidative damage of the body. MDA is a product of oxide-induced lipid peroxidation in the body, and its levels reflect the lipid peroxidation status of the body. SOD, an antioxidant enzyme in enzymatic systems, scavenges free radicals in the body and prevents oxygen radicals from damaging cell membranes and biomacromolecules. MDA and SOD are two indicators of biological effects that reflect the level of oxidative stress in the body. Research by Rosa-Caldwell^[7] suggests that deterioration in oxidative capacity is likely to affect muscle size and mass. ROS levels in normal human skeletal muscle fibers are at relatively low levels. Under physiological conditions, the antioxidants produced by skeletal muscle cells remove excessive ROS in time, so that the oxidative and antioxidant balance in the body is maintained to maintain free radical homeostasis^[8-9]. Enoki et al.^[10] point to a close relationship between oxidative stress, inflammation, and muscle wasting. Their study showed that increased ROS induced increased expression of tumor necrosis factor α - α (TNF- α), which triggers the production of myostatin through the nuclear factor kappa B (NF- κ B) pathway, which can further stimulate the production and release of pro-inflammatory cytokines in muscles. Kim et al. believe that^[11] myostatin is one of the muscle factors that negatively inhibit muscle cell growth and differentiation, and its expression activates the E3 ubiquitin linkases MuRF-1 and Atrogin-1, resulting in muscle atrophy. In short, the oxidative stress system is activated in patients with cachexia, and the excessive production of ROS can promote the expression of key atrophy factors MuRF-1 and Atrogin-1 through the NF- κ B pathway, and further stimulate the expression of inflammatory factors, resulting in increased protein degradation and forming a vicious circle. Changes in mitochondrial function are closely related to the development of sarcopenia. The presence of deformed mitochondria in the muscles of patients with cachexia cancer can lead to a loss of structural integrity of skeletal muscle. Studies have found reduced ATP synthesis and uncoupling in mitochondria of tumor-bearing mice, indicating reduced ATP synthesis in skeletal muscle in cancer cachexia^[12]. Impaired mitochondria not only have lower bioenergy efficiency, but also produce a large amount of ROS, which increases the stability of mitochondria in skeletal muscle fibers, thereby increasing their sensitivity to apoptosis stimuli, while downregulating pathways associated with mitochondrial biogenesis [ATP-ubiquitin-proteasome pathway (UPP)], increasing protein breakdown, Decreased muscle fiber diameter and myosin heavy chain levels in muscle tissue contribute to the development of sarcopenia^[13].

2.1.2 Protein synthesis and degradation

The quality of skeletal muscle largely depends on the amount of fibrin, which is affected by protein synthesis and breakdown. The high consumption of tumors, tumor progression and anti-tumor therapy affect the digestive system and physical activity, on the one hand, resulting in the relative deficiency or insufficient intake of nutrients such as proteins and vitamins necessary for muscle synthesis, and on the other hand, muscle uselessness, resulting in increased muscle protein loss and decreased synthesis. The determinant of protein synthesis is not only protein intake, but also the signaling of anabolic molecules. Studies at home and abroad have found that the enhanced activity of the UPP pathway is the main cause of protein breakdown and muscle atrophy in skeletal muscle. Muscle-specific cyclodactyl protein (MuRF-1) and muscle-wasting box F protein (MAFBX), two muscle-specific E3 ubiquitin linkases of UPP, are major markers of muscle wasting^[14]. NF- κ B is a class of transcription factors found in cytosols. In physiological, it binds tightly to I κ B through covalent bonds, keeping it in an inactive state. When cells are stimulated by various factors, NF- κ B is activated after separation from its inhibitory protein I κ B, thereby participating in the pathophysiological processes of various diseases and playing an important role in apoptosis, inflammation, differentiation, etc. With the progression of tumors, the body presents a chronic inflammatory state, the levels of various inflammatory substances and pro-inflammatory factors increase, anti-inflammatory molecules decrease, promote protein decomposition and inhibit protein synthesis through a variety of signaling pathways, resulting in anabolic imbalance in muscle tissue. Among cancer cachexia, the most prominent pro-inflammatory cytokines produced by immune cells and tumor cells are interleukin-6 (IL-6) and TNF- α , both of which are associated with the inflammatory response of skeletal muscle^[15-16]. IL-6 is high in cachexia patients and is associated with weight loss. Studies have found that IL-6 can be used as skeletal muscle growth factor when low expression, and high levels of IL-6 can inhibit IGF-1 anabolism on muscle tissue, and can also activate the NF- κ B pathway, promoting the high expression of E3 ubiquitin-linked enzymes MuRF-1 and Atrogin-1, resulting in high losses of low synthesis and metabolism in the body, resulting in ubiquitination and degradation of myofibrin^[17-18]. TNF- α can inhibit phosphatidylinositol-3-kinase (PI3K)-protein kinase B(Akt)-mammalian target of rapamycin (mTOR), activate the ubiquitin-proteasome system and activate

lysosomal autophagy pathway by delivering reactive oxygen species and activating metallothionein transcription factor (Fox-O) to regulate apoptosis, and can also activate I κ B kinase phosphorylation of I κ B (inhibitor of NF- κ B), NF- κ B Entry into the nucleus increases the breakdown of proteins within skeletal muscle through the NF- κ B signaling pathway, and synthesis decreases [19]. In addition, some chemotherapy drugs can directly interfere with the above pathways, such as cisplatin can increase protein hydrolysis by activating NF- κ B, upregulating ubiquitin and proteasome; Paclitaxel causes upregulation of tumor growth factor- β (TGF- β) protein, activates the inhibin gene, and interferes with the metabolic balance of muscles, making them biased towards catabolism [20-21].

2.2 Treat

At present, there are few studies on malignant tumors combined with sarcopenia, mostly focusing on sarcopenia and cancer Correlation between clinical prognosis, prognosis and postoperative complications of preoperative sarcopenia and surgical treatment [22-23]. Treatment options for tumor-related sarcopenia are even more lacking, and more refer to the treatment of sarcopenia: exercise (resistance exercise), nutrition and metabolic therapy [protein intake, β -hydroxy- β -methylbutyrate, vitamin D, creatine, carnitine and omega-3 polyunsaturated fatty acid (omega-3 PUFA)) and drug therapy (nonsteroidal selective androgen receptor modulators, hormonal drugs, Muscle growth statin, nonsteroidal anti-inflammatory cyclooxygenase-2 inhibitors). The Guidelines for the Clinical Diagnosis and Treatment of Tumor-Associated Sarcopenia suggest that a combination of exercise, nutrient metabolism, and pharmacological intervention may be the most effective means of preventing and treating tumor-associated sarcopenia [24]. Multimodal interventions (omega-3 PUFA supplements, exercise, and the anti-inflammatory drug celecoxib) have been demonstrated to be feasible and safe in patients with cachexia in advanced lung or pancreatic cancer [25]. A larger, multimodal phase III trial is currently underway to evaluate the efficacy of EPA/NSAIDs, nutrition, and campaigns in the treatment of malignant patients with tumors [26].

2.2.1 ω -3 PUFA

Omega-3 PUFA supplementation is one of the common nutritional metabolism therapies. Omega-3 PUFA is an essential polyunsaturated fatty acid with important physiological functions, and omega-3 PUFA improves muscle mass through a number of different mechanisms. For example, omega-3 PUFA increases mTOR ribosome activity through phosphorylation and inhibits mTOR translocation into lysosomes. In the presence of omega-3 PUFAs, muscles have a stronger anabolic response to insulin and amino acid infusions. Omega-3 PUFA can also affect mitochondria, increase uncoupling protein-2, reduce mitochondrial oxidative residues reactive oxygen species, and downregulate proteasome-mediated proteolysis [27-29]. Omega-3 PUFA promotes skeletal muscle anabolism, and omega-3 PUFA supplementation in oncology patients can help prevent and treat their tumor-associated sarcopenia. Barber MD et al. [30] studied the effect of daily administration of the fixed energy and nutritional supplement eicosapentaenoic acid (EPA) in 20 patients with pancreatic cancer with weight loss, and found that the ratio of IL-6, cortisol to insulin and secreted proteolytic inducible factors decreased, and serum insulin concentrations increased, which were closely related to the increase of body mass index. The results of Ryan AM et al. [31] suggest that perioperative use of EPA-rich enteral nutrition supplementation in lung cancer surgery can maintain lean body mass (LBM). In addition, oral EPA can also alter the levels of various factors that affect catabolism in patients with malignancy and tumor cachexia, suggesting that it may improve BMI loss. When combined with protein- and energy-rich nutrients, an increase in LBM can be obtained, resulting in weight gain and delayed loss of muscle tissue in tumor patients.

2.2.2 Thalidomide

Thalidomide is one of the commonly used drugs to improve the cachexia of cancer patients, which can act on the human immune system, and has more effects, can have a resistance effect on tumors, and can also reduce the activity of inflammatory factors that cause anorexia in the human body. The principle of its drug is to regulate the immune system and play an anti-inflammatory effect by adjusting human TNF- α and IL-6, so it is often used in the treatment of tumor cachexia patients and human immune system disorders. Takayama K et al. [32] pointed out in the study that when the human body loses weight and fat content decreases, thalidomide is the only drug that can inhibit weight loss and increase fat content. The thalidomide trial in patients with cachexia found that 100 patients taking 200mg of thalidomide per day controlled the loss of body mass and lean tissue, while having a high degree of safety and tolerance. The combination of thalidomide and megestrol drugs has found that it can improve the appetite, body weight, grip strength and quality of life of patients with cachexia, significantly reduce the state of fatigue, and reduce the indicators of TNF- α and IL-6 in humans. The person in charge of this study has been paying

attention to the clinical application of this drug, and the preliminary basic experiments have found that thalidomide can reduce the expression of TNF- α and IL-6 inflammatory factors, inhibit the NF- κ B pathway, downregulate the expression of E3 ubiquitinase MuRF-1 and Atrogin-1, improve skeletal muscle depletion, and alleviate the cachexia state of lung cancer, suggesting that it can improve sarcopenia through the NF- κ B pathway-mediated UPP pathway. Its adverse reactions include drowsiness that can improve insomnia in tumor patients.

3. TCM's understanding of tumor-related sarcopenia

3.1 Etiology, pathogenesis and dialectical treatment of traditional Chinese medicine

Sarcopenia is a concept proposed in the past 20 years, so there is no name for sarcopenia in Chinese medicine, and there are many discussions on muscle loss, muscle strength decline and functional decline in ancient Chinese medicine books. Modern doctors often associate sarcopenia with the names of diseases such as traditional Chinese medicine hemorrhage, fatigue, and five damages, believing that its disease is located in the muscles and muscles, and its occurrence and development are closely related to the spleen and kidneys. The research on sarcopenia in traditional Chinese medicine has just started, and the understanding of it has not been completely unified among various doctors, and most believe that the occurrence of sarcopenia is related to the spleen and kidneys, weak qi and blood, and loss of muscle and veins are the main pathogenesis. Professor Heng Xianpei believes that sarcopenia belongs to the category of hemorrhoids, and believes that its etiology and pathogenesis are mainly damp heat and obstruction, phlegm and wet spleen, spleen deficiency, sputum and stasis knotted, liver and kidney yin deficiency, respectively apply the treatment methods of clearing heat and moisture, strengthening the spleen and dissolving phlegm, replenishing the spleen and invigorating qi, dissolving phlegm and removing stasis, and nourishing the liver and kidneys, and combined with a variety of methods such as foot massage and tea treatment, good efficacy has been achieved [33]. Chen Jiamin et al. [34] also believe that sarcopenia should belong to the category of "hemorrhoids", the disease is located in the muscles, and its occurrence is mainly related to the liver, spleen and kidney. Liu Xiaoting [35] proposed to supplement the spleen and invigorate qi to treat sarcopenia syndrome, and verified through animal experiments, that supplementing the spleen and invigorating qi can inhibit the occurrence of sarcopenia syndrome. Wei Jing et al. [36] also emphasized the importance of treating sarcopenia from the spleen. Li Wei [37] found through animal experiments that the medicated diet to replenish the spleen and invigorate qi (Four Gentlemen's Soup) can reduce the oxidative damage of rat serum and rectus femoris, thereby delaying the aging of skeletal muscle. Zhang Shu et al. [38] used Blood Fu Zhu Zhu Chu Capsule to study the muscle atrophy of rats under simulated weightlessness, and the results showed that Blood Fu Zhu Qiu Capsule played a protective role in weightless muscle atrophy of rat soleus muscle. In general, the method of nourishing the spleen and stomach is the main direction and means of traditional Chinese medicine to treat this disease, "the main muscles of the spleen", the spleen is the "official of the cang", the spleen is in the body and flesh, the main limbs, the spleen and stomach can replenish the internal organs, and the metaplasia of qi and blood nourishes the muscles. A large number of modern studies have confirmed that spleen and gastric prescription drugs have shown good efficacy in clinical treatment and experimental studies of this disease, such as fragrant sand liujunzi decoction combined with medroxyprogesterone can effectively improve the quality of life of tumor patients and prolong the life of patients [39]; Four gentlemen's decoction can improve the loss of body weight caused by cachexia in tumor mice and improve the quality of life [40]; Chen et al. proved [41] that flavored four-gentleman tong, with astragalus and cistanche, can regulate mitochondrial function by reducing Atrogin-1 levels, improve muscle atrophy, and delay the development of amyotrophic lateral sclerosis. Hu Chenglin et al. [42] found that the combination of ginseng white surgery and nutritional support can improve the weakness of tumor cachexia patients, reduce the expression of TNF- α in patients, control the development of cachexia, and improve the quality of life of patients. Therefore, the mechanism study of spleen strengthening and gastric moisture in the treatment of tumor-related sarcopenia has prospective reference value.

3.2 Qi and muscle building soup

Based on the complex etiology of qi and yin deficiency, qi stasis and phlegm dampness in patients with advanced esophageal cancer, Yiqi Muscle Building Soup is composed of 30g of astragalus, 10g of scutellaria baicalensis, 9g of Chaihu, 15g of Weilingxian, 5g of acute seed, 10g of swirling flower, 10g of citrus aurantium, 10g of Jiao hawthorn, 10g of angelica quaica, 10g of white peony, 10g of Maidong and 6g of Schisandra. Six gentlemen's soup from "Medical Orthography", is a representative formula for

strengthening the spleen and stomach, made of four gentlemen's soup (ginseng, baiju, poria, licorice) plus tangerine peel, half summer, with products that invigorate qi and strengthen the spleen with medicine that dries and humidifies phlegm, tonifies and laxatives, and treats both symptoms and root causes. Fang Zhong ginseng is a jun, sweet and warm, invigorating qi, strengthening the spleen and nourishing the stomach. Baishu is bitter and warm, strengthens the spleen and dampness, and must be used with ginseng, and the power of invigorating qi and strengthening the spleen is beneficial. Poria gan lightly moisturizes and strengthens the spleen, and the combination of Ling and Shu helps Jun medicine to strengthen the spleen and dispel dampness. Half summer is warm and dry, which is an essential medicine for dissolving wet phlegm, and is good at reducing rebellion and stomach nausea; Tangerine peel can not only regulate the qi machine to remove chest and neck, but also relieve vomiting to reduce stomach qi, and can also dry and humidify phlegm to dissipate dampness and accumulated phlegm. The first two medicines are adjuvants, accompanied by the effect of Jun medicine to dry and humidify phlegm. Licorice is used as an adjuvant medicine, invigorating qi and neutralizing medicines. The six medicines are used together, and they play the function of invigorating qi and strengthening the spleen, drying and humidifying phlegm. At present, clinical reports show that the spleen and gastric prescription medicine Liujunzi decoction is widely used in the treatment of tumor cachexia, and has achieved good efficacy in improving the appetite and weight of patients, but the mechanism of its treatment of tumor cachexia is not clear. Some studies have reported that ginseng and white volatile oil in Liujunzi soup can effectively regulate the secretion of IL-6, an important pro-inflammatory factor in tumors; Animal experiments can inhibit the growth of nude mouse transplant tumors, enhance the effect of cisplatin on mitochondrial membrane potential of lung cancer EC9706 cells, regulate mitochondrial respiratory capacity, and improve the quality of life of lung cancer mice, protect organs, and reduce histopathological damage [43-45]. Liujunzi decoction can improve the body weight loss of lung cancer cachexia mice, alleviate the gastrocnemius muscle mass loss of lung cancer cachexia mice, increase the cross-sectional area of muscle fibers in the gastrocnemius muscle of lung cancer cachexia mice, and slow down the muscle atrophy process of cachexia mice, the mechanism of which may be by inhibiting the expression of STAT3/ubiquitin proteasome pathway-related proteins and genes [46]. Astragalus is sweet, slightly warm, into the spleen and lung meridians, can replenish qi, solid surface water, support sepsis and muscle. Modern studies have shown that the astragalus polysaccharides in astragalus have immunomodulation, antitumor, and anti-atherosclerosis [47]. *Scutellaria baicalensis* has flavonoids and their glycosides, terpenoids and volatile oils, which have pharmacological effects such as antipyretic, anti-inflammatory, antimicrobial, antitumor, antioxidant and other pharmacological effects, and have certain therapeutic effects on the digestive system, cardiovascular system, nervous system and other diseases [48]. Chai Hu tastes bitter, bitter, and slightly cold; Attributed to the liver, gallbladder meridian. It has antipyretic table, liver relief and depression, lifting yang qi to cure fever, less yang evidence, liver depression and stagnation, qi deficiency and depression, organ prosperation, antipyretic malaria. Its chemical composition is mainly triterpenoidal saikosaponin, which has antipyretic, analgesic, anti-inflammatory, antibacterial, anti-liver damage, antitumor, antidepressant and other effects [49]. Bitter taste, bitter, warm; Attributed to the liver, spleen meridian. It has the effect of breaking qi and breaking blood, eliminating accumulation and relieving pain. It is used for blood gas heartache, dietary stagnation, abdominal distention, blood stagnation, dysmenorrhea, fistula, lumps, bruises. Its chemical composition is mainly volatile oil and curcumin, polysaccharides, sterols, phenolic acids, alkaloids, etc., modern pharmacological studies have shown that curcumin has anti-tumor, antiplatelet aggregation, antithrombotic, lipid regulation, anti-atherosclerosis, anti-tissue fibrosis, anti-inflammatory analgesia, antibacterial and antiviral, hypoglycemic, antioxidant and other pharmacological effects [50]. Wellingxian taste is spicy and salty, can remove wind and evil, remove dampness and cold in the body, and is often used in the treatment of rheumatic paralysis. Welling fairy good deeds, can pass through the twelve meridians, widely used in limb numbness, tendon and pulse spasm, poor flexion and extension, bone choking throat and other diseases. It mainly contains saponins, flavonoids, lignans, phenols, alkaloids and other components; Pharmacological studies have shown that Wellingxian has anti-inflammatory, analgesic, antitumor, antibacterial and other activities [51]. Acute taste is spicy, slightly bitter, and warm; Attributed to the liver, spleen meridian. The function is to reduce the qi, soft and firm to disperse. Acute seed has the effect of breaking blood, soft and hard, and accumulation, and its various active ingredients determine that it has different pharmacological effects, the main effects include transdermal promotion, blood rheology, antioxidant, stimulation of uterine smooth muscle, anti-fertility, antibacterial, antitumor and other effects [52]. The swirling flowers taste bitter, pungent, salty, and lukewarm. It belongs to the lungs, spleen, stomach, and large intestine. "Shennong Materia Medica": "The main qi of the swirling flower, the full under the threat, the palpitation, the removal of water, the cold and heat between the five organs, and the middle and lower qi." "Antibacterial and antifibrotic [53]. It has antiasthmatic, antitussive, expectorant, and anti-inflammatory effects, relaxes the smooth muscle of the trachea in guinea pigs, and fights the contraction

response caused by histamine and acetylcholine ^[54]. It has the effect of breaking qi and removing accumulation, dissolving phlegm and eliminating ruffians, and is used for food accumulation and stagnation, full of swelling pain and other symptoms, often used with white surgery, banxia and other spleen strengthening drugs. Coumarins and flavonoids in citrus aurantium can regulate gastrointestinal function ^[55]. Burnt hawthorn acid, sweet, lukewarm. Attributed to the spleen, stomach, liver meridian. Eliminate food and strengthen the stomach, and disperse qi and stasis. For meat stasis, stomach fullness, diarrhea abdominal pain, blood stasis, postpartum stasis, abdominal tingling, hernia pain; Hyperlipidemia. The anti-food retardation effect of Jiao hawthorn is enhanced. It is used for meat stagnation, diarrhea and unpleasantness. Hawthorn is a medicinal and food homologous plant, containing flavonoids, flavanes and their polymers, triterpenoids and organic acids and other chemical components, mainly regulating blood lipids, protecting the liver, lowering blood pressure, aiding digestion, strengthening the heart, antioxidant, antitumor, antibacterial and other chemical components ^[56]. Angelica is sweet, spicy, and warm; Attributed to the liver, heart, and spleen meridians. The function is to replenish blood and activate blood, regulate menstruation and relieve pain, moisturize the intestines and laxative. Mainly treats blood deficiency chlorosis, irregular menstruation, menstrual amenorrhea, blood deficiency, blood stagnation, blood cold pain, bruises, carbuncle sores, irritable bowel and constipation. Contains phthalides and their dimers, phenolic acids, polysaccharides, flavonoids and other types of chemical components. Angelica and its main chemical components have pharmacological effects on the body's hematopoietic system, circulatory system, nervous system, immune system and other systems; Its main biological activities include hematopoiesis, antiplatelet aggregation, antiarrhythmia, antiradiation, antitumor, analgesic, smooth muscle regulation, and organ protection ^[57]. White peony tastes bitter, sour, slightly cold, liver, spleen meridian. Nourish blood and regulate menstruation, suppress yin and stop sweating, soften the liver and relieve pain, and calm liver yang. It is mainly used for blood deficiency chlorosis, menstrual irregularities, self-sweating, night sweats, hypochondria pain, abdominal pain, limb spasm, headache and dizziness. Modern studies have shown that white peony has analgesic, sedative, anticonvulsant, anti-inflammatory, effect on the immune system, hepatoprotective effect, improves blood rheology ^[58]. Mai Dong is sweet, slightly bitter, slightly cold, and belongs to the stomach, lungs, and heart meridians. Mai Dong is cool and moist, which can not only nourish the yin and moisturize the lungs, but also reduce the qi and reduce the qi, moisturize and bring tonics, which is a good medicine for nourishing the yin and lowering the cough. It has good effects on yin deficiency and lung dryness, dry cough, dry cough, exertion fever and hemoptysis, while Mai Dong also has obvious effects on fire against qi and throat. Modern research has found that the chemical composition of Maidong mainly includes steroidal saponins, high isoflavones, polysaccharides, etc.; It has pharmacological effects such as lowering blood sugar, protecting the cardiovascular system, enhancing immunity, anti-skin aging, anti-inflammatory, and anti-tumor ^[59]. Schisandra sour, sweet, warm. Belongs to the lungs, heart, kidneys, and spleen meridians. Efficacy: Invigorates qi and nourishes kidney, relieves cough, relieves diarrhea, astringent, nourishes the mind, calms the nerves. The "Shennong Materia Medica" records that Schisandra mainly treats "labor and thinness, make up for deficiencies, strengthen yin, and benefit men's essence." "Schisandra is rich in lignans, polysaccharides, volatile oils and other chemical components, which have various functions such as liver protection and kidney protection, cardiovascular and cerebrovascular protection, sedation, and hypnosis ^[60].

4. Conclusions

In summary, in recent years, with the proposal of tumor nutrition therapy, more and more researchers have focused on the research of tumor-related sarcopenia, and relevant literature has proved that tumor-associated sarcopenia is related to poor clinical prognosis of tumors. However, most of the existing clinical studies are retrospective studies, and most of them focus on the prognosis and postoperative complications of preoperative sarcopenia and surgical treatment of lung cancer, while little is known about the relationship between sarcopenia and the prognosis of patients with unresectable middle and advanced lung cancer, adequate nutritional support, and the clinical outcome and related mechanisms of integrated traditional Chinese and Western medicine therapy on sarcopenia in lung cancer. Although there are some guidelines for tumor-related sarcopenia, there are still no approved specific therapeutic drugs for sarcopenia, the overall efficacy is still poor, and there is a lack of clinical efficacy research and mechanism exploration of the combination of traditional Chinese and Western medicine in the treatment of sarcopenia. Therefore, there is an urgent need for prospective, large-sample, multi-center clinical trials to provide evidence-based medical basis for the integrated diagnosis and treatment of esophageal cancer sarcopenia.

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