

Reflections on the Use of Blood Activation and Stasis Removal in the Treatment of Lung Cancer

Junhui Wang, Kai Wang*

Shaanxi University of Chinese Medicine, Xiangyang 712046, China.

Abstract: According to Chinese medicine, lung cancer is a malignant tumour with cough, haemoptysis, chest pain, fever and shortness of breath as its main manifestations. Its causes are: deficiency of positive qi, external invasion of evil toxins, internal accumulation of phlegm, stagnation of qi and blood, obstruction in the lung and loss of suction and descent of the lung. Blood stasis is the main cause of lung cancer, therefore, activating blood circulation and removing blood stasis is an important principle in the treatment of lung cancer. In recent years, the anti-cancer mechanism of traditional Chinese medicine and its extracts has gradually received academic attention, and the herbs that invigorate blood circulation and remove blood stasis have been widely used in clinical practice. This article introduces the mechanism of the action of Chinese medicine to invigorate blood circulation and remove blood stasis in the treatment of lung cancer in recent years, which provides a reference for clinical treatment and new drug development.

Keywords: Lung Cancer; Blood Circulation and Blood Stasis Activation; Overview

1. Introduction

Lung cancer is currently the most common malignant tumour in clinical practice, and its incidence and mortality rate are increasing year by year. 2010, lung cancer ranked first in China in terms of morbidity and mortality, and both mortality and morbidity rates are increasing. Therefore, the search for new anti-tumour drugs has become a hot spot for medical research.

2. Basic Principles and Historical Origins of Chinese Medicine

The treatment method based on activating blood circulation and removing blood stasis works by regulating blood, activating blood circulation and removing blood stasis. The method of activating blood circulation and resolving blood stasis is commonly used in clinical practice, and is combined with other methods of treatment depending on the situation. Common clinical treatments include: warming the meridians and invigorating the Blood, detoxifying and invigorating the Blood, cooling the Blood and removing stasis, moving Qi and invigorating the Blood, attacking and expelling stasis, benefiting Qi and invigorating the Blood, nourishing the Blood and invigorating the Blood, nourishing Yin and invigorating the Blood, and warming Yang and invigorating the Blood. In recent years, modern scientific knowledge and methods have been used to discuss the theory of "invigorating Blood and resolving Blood stasis", which has deepened people's understanding of "Blood stasis" and enriched the connotation of "Blood stasis". Clinical practice has proven that Blood Stasis can be used in the treatment of various diseases in Western medicine, especially malignant tumours, and that it can effectively destroy cancer cells, enhance the antigenicity of tumours and strengthen the body's immunity to tumours [1]. At present, many Chinese scholars believe that the etiology of tumor is mainly caused by empty fire phlegm stasis, which is not only a factor of pathology, but also the result of pathology. Lung cancer is a common malignant tumor, also known as "lung accumulation"

and "lung fistula" in traditional Chinese medicine, but its pathogenesis is related to "blood stasis", so it can be treated by "activating blood circulation and removing blood stasis" method.

3. Study on the Relationship Between Lung Carcinogenesis and Blood Stasis

According to TCM, those with blood fetishes are closely related to lung deficiency evidence. Stasis of blood can induce tumours, while redness can promote blood deficiency, and the two have a synergistic effect. According to the "Guidelines for Clinical Research on New Chinese Medicines" issued by the Ministry of Health of the People's Republic of China in 1993, the TCM typing of lung cancer, the "Clinical Chinese Medical Oncology" lung cancer typing in 2003, and the "Tenth Five-Year Plan" Key Specialties Cooperation Group of the State Administration of Traditional Chinese Medicine in 2011 Professor Liu Jiexiang's TCM lung cancer typology includes "blood stasis", which is considered to be the main cause of lung cancer; a study was conducted on 120 patients with advanced NSCLC. The results showed that more than 60% of the patients had signs of blood stasis [2]. At the same time, the treatment with traditional Chinese medicine could reduce the metastasis of the tumor. The results showed as follows: Among the 68 NSCLC patients, 24 patients mainly had Qi-stasis and blood stasis, mainly stage IV NSCLC, indicating that Qi-stasis and blood stasis were related to the development of lung cancer to a certain extent. The TCM syndromes after NSCLC surgery were analyzed. The results showed that the proportion of blood stasis evidence was basically the same before and after surgery, indicating that although surgery removed the tumour, it did not change its TCM evidence; on the contrary, it suggests that blood stasis evidence is an important cause of lung cancer development. 2) Tumour-blood stasis: as stated in Wang Qingren's "Medical Lin Correction", "Insufficient qi and blood, when the qi and blood are not smooth, they stagnate in the blood "Lung cancer is a disease of "accumulation", and over time, it will lead to "blood stasis".

The modern medical dimension: 1) Blood stasis - tumour: In modern medicine, "blood stasis" is a different phenomenon from "hypercoagulable state", which is caused by abnormalities of certain prothrombin time, fibrinogen, D-dimer and platelets in cells. The mechanisms by which hypercoagulability can also lead to tumour development are: Platelet activation directly stimulates tumour cell activation and leads to tumour development: tumour cells cause damage to endothelial cells, leading to active aggregation of vascular endothelial cells. FW is produced by the liver and is closely related to tumor angiogenesis, which has certain influence on tumor growth, differentiation, invasion, and metastasis. Tumor-blood stasis: Because tumor cells can cause vascular endothelial damage, hemodynamic abnormalities and blood hypercoagulation, hemorheological examination shows that the blood coagulation of lung cancer increases, and with the deepening of blood agglutination, the chance of metastasis of lung cancer will also increase, which may cause tumor metastasis. Pathological hypercoagulability often occurs in patients with malignant tumor due to abnormal bleeding function, which is generally believed to be related to the condition and prognosis of the tumor, and has important clinical significance [3].

4. Experience in the Treatment of Lung Cancer by Promoting Blood Circulation and Removing Stasis

Lung cancer is the "lung accumulation" and "Ben" of traditional Chinese medicine. Although there is no direct corresponding disease name in traditional Chinese medicine books, there are descriptions of "rock" and "accumulation" in ancient literature, accompanied by cough, phlegm, blood coughing, labile breathing and other diseases. The descriptions of these diseases are the same, which is likely to be of the same type. The name of TCM lung cancer was first published in

Practical TCM Internal Medicine in the editor-in-chief of Prescription. Since then, the name has been used in both the Catalogue of Diseases of Traditional Chinese and Western Medicine and the sixth edition of the Internal Medicine of Traditional Chinese Medicine, because modern medicine has many diagnoses of diseases, so most of them can be confirmed. However, clinically, some patients' lungs occupy a large space and have the above symptoms, but due to some special reasons, the etiology cannot be determined. It can be referred to that these patients are typical representatives of TCM lung cancer, and the syndrome differentiation treatment is of great help to the treatment of TCM lung cancer. In the literature, the pathogenesis of tumor is mainly phlegm, deficiency, poison and stasis, and the same is true for lung cancer. Lung cancer is caused by a variety of causes, not a single cause [4].

"Blood stasis" is a kind of self-defense response of the body. When the body organs are dysfunctional, the internal organs fail to function properly, and the body will spontaneously make a defense response due to its own lesions, thus forming a protective response of "blood stasis", which is similar to the self-immune response of modern medicine. Scholars believe that this kind of defense response is beneficial. It's not true that you can prevent the development of disease and you can prevent the development of cancer. In recent years, Bi Liangyan et al. investigated the effects of blood-stasis activating drugs, such as *Salvia miltiorrhiza*, *Radix Paeoniae*, *Rhizoma saffroni*, *Corydalis*, Sodium ferulic acid and *Chuanxiong*, on the lung metastasis of liver cells in mice in more than 300 cases of blood-stasis malignant tumours treated with radiotherapy and chemotherapy combined with the method of activating blood stasis. The results showed that most of the drugs had the effect of promoting tumor metastasis; Fu Naiwu et al. found that *Salvia miltiorrhiza* had a significant promotion effect on intravascular hematological diffusion and metastasis in W256 rats; Ding Gang et al. reported that *Salvia miltiorrhiza* and *Paeonia lactiflora* had a significant promotion effect on VEGF expression in rats and promoted angiogenesis in rat tumors, thus increasing their chances of infiltration and metastasis. Therefore, we should be cautious in the treatment of tumours. We should conduct individual analysis and identification of the causes of blood stasis according to the time of tumour onset, the time of blood stasis, the tumour patient's constitution, the Chinese medical evidence, the tongue, the pulse and other factors, and try to find out the cause of blood stasis, whether it is an "etiological cause" or a "defensive reaction". It is important to find out the cause of blood stasis, whether it is the "cause of the disease" or a "defensive reaction", which plays a crucial role in the treatment of tumour patients and may even affect the prognosis of the tumour. Although it is still debated, it is still beneficial to the treatment of tumour patients, provided it is correctly identified and used appropriately [5].

In addition, a study by HeitJA et al. showed that the proportion of blood stasis evidence was the same in pre- and post-operative NSCLC, suggesting that surgical treatment did not change the patient's TCM symptoms, which suggests that "blood stasis" is highly relevant to lung cancer. In modern medicine, "blood stasis" can be interpreted as blood hypercoagulation, which is a common, highly morbid and dangerous disease in lung cancer patients and is closely related to their prognosis. It is mainly manifested as increased D-dimer or abnormal coagulation function. *Panax notoginseng* has the effect of activating blood circulation and resolving blood stasis. A study by Wu Yan et al. on *Panax notoginseng* wall-broken tablets showed that *Panax notoginseng* has some effect on coagulation and blood clotting, but there is a significant relationship with the use of the drug, when higher doses are used, the effect of *Panax notoginseng* can vary greatly, so clinicians can choose *Panax notoginseng* according to the actual situation. Also, this trial measured the D-dimer content at 0, 14 and 28 days. The results showed that the level of D-dimer in the control group of the lotus model gradually increased over time, while the level of D-dimer decreased significantly after TSPN gavage, and the degree of reduction of D-dimer was positively correlated with TSPN concentration. The results showed that TSPN could not only inhibit the expression of histone B, but also reduce the concentration of D-dimer, thus changing the blood viscosity, improving the prognosis and prolonging the survival rate of the patients. Therefore, although TSPN has the risk of activating blood circulation, promoting swelling and pain, and metastasis, it can still be used clinically as long as the evidence is correctly identified and varied from person to person.

5. Conclusion

"Stasis" is a state of the body, "stasis" is a disease mechanism, and blood stasis is a pathological product of "stasis". In the early stage of "stasis" syndrome, there is only Qi machine obstruction without blood stasis. In the stage of Qi machine obstruction, it will lead to blood hypercoagulation, abnormal blood rheology, slow blood flow rate and increase of D dimer, etc. With the deepening of the degree of Qi machine obstruction, Qi machine obstruction forms the stage of Qi stagnation and blood stasis, which is a kind of substantial blood stasis damage, mainly manifested by the formation of thromboembolus, the formation of vascular plaque, the thickening of blood vessel wall, the decrease of blood vessel elasticity, and the formation of local mass. Therefore, further breakthroughs can be made in the fields of molecular biology, pharmacology, drug extraction and drug research and development through the extraction and separation of active ingredients and the study of their anti-tumor action mechanism.

References

- [1] Pardo de Santayana M. García, Chang A., Schmid S., Dong M., et al. 945P Respiratory and cardiometabolic comorbidities and stage I-III non-small cell lung cancer (NSCLC) survival: A pooled analysis from the International Lung Cancer Consortium (ILCCO)[J]. *Annals of Oncology*, 2022:33-37.
- [2] Girard N., Popat S., Rahhali N., et al. 1117P Amivantamab compared with European, real-world (RW) standard of care (SoC) in adults with advanced non-small cell lung cancer (NSCLC) with activating epidermal growth factor receptor (EGFR) exon 20 insertion mutations (exon20ins), after failure of platinum-based therapy[J]. *Annals of Oncology*, 2022:31-35.
- [3] Qian YS, Cunsolo Alessandra, Chen Meizhen, et al. Strategies of Mechanical Adaptation of CTCs to Blood Circulation[J]. *Biophysical Journal*, 2021:120.
- [4] Takegami Shigehiko, Konishi Atsuko, Okazaki Shizuno, et al. Effects of mono- and dialkylglucosides on the characterisation and blood circulation of lipid nanoemulsions[J]. *Journal of microencapsulation*, 2019:36-38.
- [5] Sun MQ, Li Y, Hu G, et al. Platelets Lipidomics Study of Blood Stasis Rats Model by Using Liquid Chromatography-tandem Mass Spectrometry[J]. *Journal of separation science*, 2022: 23-26.