

Master Cao's Experience in Treating Lung Cancer

Xuejuan Zhai^{1,a}, Yaohui Li^{2,b,*}, Liping Cao^{2,c}, Mian Chu^{2,d}

¹Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712046, China

²Shaanxi Provincial Hospital of Chinese Medicine, Xi'an, Shaanxi, 710003, China

^a1959525832@qq.com, ^bzhliyaohui@163.com, ^chuxicaoliping@163.com, ^d1248629196@qq.com

*Corresponding author

Abstract: *Objective:* To explore the drug use law of Director Cao Liping in the treatment of lung cancer. *Methods:* 150 cases of medical records were collected and the characteristics of medication were analyzed with the help of "Traditional Chinese Medicine Inheritance Computing Platform (V3.0)". *Results:* The four Qi are mainly cold, warm and calm; The five flavors are mainly bitter, spicy and sweet; Meridians are mainly lung, spleen and stomach meridians; Its efficacy is mainly in resolving phlegm, relieving cough and asthma, tonifying deficiency and clearing heat. There are 26 drugs with frequency of more than 30 times, 41 groups of high-frequency drug combinations, and 4 groups of core prescriptions. *Conclusion:* The key of lung cancer is to strengthen the spleen and clear the lung, strengthen the spleen and clear the lung, supplement the deficiency and strengthen the right, and detoxify and remove the turbidity. The prescription can be used flexibly.

Keywords: Lung cancer; Cao Liping; Traditional Chinese medicine inheritance computing platform; Law of drug use; Experience of famous doctors

1. Introduction

Lung cancer, also known as bronchial lung cancer, refers to a lung malignant tumor that occurs in the bronchial mucosa epithelium and glands ^[1]. The incidence rate and mortality of lung cancer in China rank first, and it is the primary cause of cancer death in the world ^[2]. The economic burden of lung cancer is heavy, the proportion of patients with advanced stage is large, and the 5-year survival period is low, which seriously endangers the health and safety of residents ^[3]. The etiology of lung cancer is complex, including smoking, history of chronic lung disease, genetic history and other factors ^[4], and the pathogenesis is not completely clear. Modern medical treatment of lung cancer takes surgical resection, radiotherapy and chemotherapy as the main means. In recent years, targeted treatment and immunotherapy have flourished, but there are problems such as increased drug resistance, frequent and uncontrollable side effects ^[5]. Research ^[6] shows that Chinese medicine has a good effect on lung cancer, can improve the prognosis and improve the quality of life.

2. Data

2.1. Source of prescription

The data of 150 cases in this study were selected from Director Cao Liping's clinic.

2.2. Prescription screening

2.2.1. Diagnostic criteria

Western medicine diagnosis refers to the 2022 edition of the Clinical Diagnosis and Treatment Guide for Lung Cancer of the Chinese Medical Association ^[7]; The diagnosis of traditional Chinese medicine should refer to the Guidelines for the Diagnosis and Treatment of Malignant Tumor ^[8].

2.2.2. Inclusion criteria

(a) Conforming to the diagnosis of traditional Chinese and western medicine; (b) Diagnosed as lung cancer; (c) The expected survival period is more than 3 months; (d) Sign the informed consent form; (e) Complete and accurate medical records.

2.2.3. Exclusion criteria

(a) Does not meet the above standards; (b) Allergy to traditional Chinese medicine; (c) Other organs have serious primary diseases; (d) Those who do not follow the doctor's instructions.

3. Methods

3.1. Analysis software

Traditional Chinese medicine heritage computing platform (V3.0).

3.2. Prescription entry and verification

According to the Pharmacopoeia of the People's Republic of China (2020), the name of traditional Chinese medicine is standardized uniformly, and the double-person entry and double-person verification mode is adopted to ensure the accuracy and effectiveness of the data.

3.3. Data analysis

Import Excel tables into the traditional Chinese medicine inheritance computing platform for frequency analysis. Set appropriate support, confidence and number of clusters for association rule analysis and cluster analysis.

4. Results

4.1. Statistical analysis of drug use frequency

The total use frequency of the drug is 3096 times, and 26 traditional Chinese medicines are used more than 30 times, with the use frequency of 83.07%. (Table 1)

Table 1: Statistics of drugs with frequency of use ≥ 30 times

Serial No	Name of Traditional Chinese Medicine	Frequency /time	Frequency%
1	Atractylodes macrocephala	149	4.81
2	Licorice	148	4.78
3	banxia	146	4.71
4	dried tangerine peel	146	4.71
5	Poria cocos	145	4.68
6	Fritillaria thunbergii	144	4.65
7	Stir fried malt	140	4.52
8	Perilla leaf	139	4.49
9	Chinese bellflower	129	4.17
10	windproof	123	3.97
11	Radix Pseudostellariae	119	3.81
12	Dandelion	117	3.78
13	Cuttlebone	116	3.75
14	Turmeric	101	3.26
15	Kochia scoparia	81	2.61
16	Sophora japonica	79	2.55
17	Wax gourd peel	72	2.33
18	purslane	66	2.13
19	Honeysuckle vine	64	2.07
20	Perilla seed	63	2.03
21	Mulberry white	58	1.87
22	The bitter almond	57	1.84
23	Zhidonghua	48	1.55
24	Astragalus membranaceus	44	1.42
25	Dendrobium	43	1.39
26	Trifoliate orange	35	1.13

4.2. Statistical analysis of drug property and taste

The four qi are mainly cold, warm and mild drugs; The five flavors are mainly bitter, spicy and sweet. (Table 2, Figure 1 and Figure 2)

Table 2: Statistical Table of Drug Nature and Taste

Medicinal property	Frequency /time	Frequency %	Medicinal taste	Frequency /time	Frequency%
temperature	1129	38.43	bitter	1440	33.33
cold	973	33.12	Gan	1437	33.26
flat	725	24.68	Xin	1150	26.62
Cool	111	3.78	acid	150	3.47
heat	0	0	salty	143	3.31

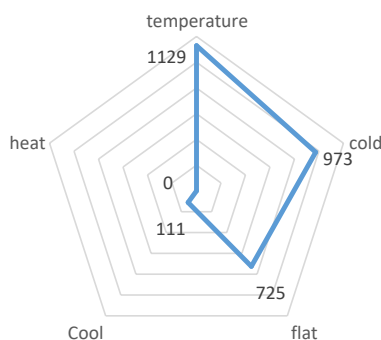


Figure 1: Four gas statistical radar chart

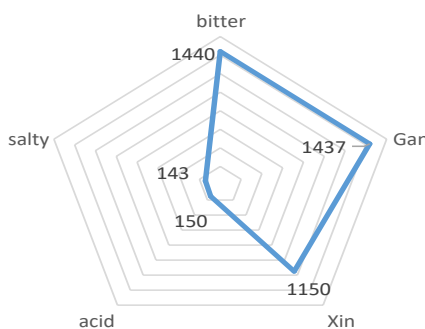


Figure 2: Radar Chart of Wuwei Statistics

4.3. Statistical analysis of meridian tropism of drugs

The main meridians are lung, spleen and stomach. (Table 3 and Figure 3)

Table 3: Statistical table of meridian tropism of drugs

Serial No	Meridian tropism	Frequency /time	Frequency%
1	lung	1814	26.61
2	spleen	1587	23.28
3	stomach	933	13.69
4	heart	692	10.15
5	liver	671	9.84
6	kidney	535	7.85
7	large intestine	296	4.34
8	bladder	127	1.86
9	small intestine	84	1.23
10	gallbladder	56	0.82
11	Trifocal	22	0.32
12	pericardium	0	0

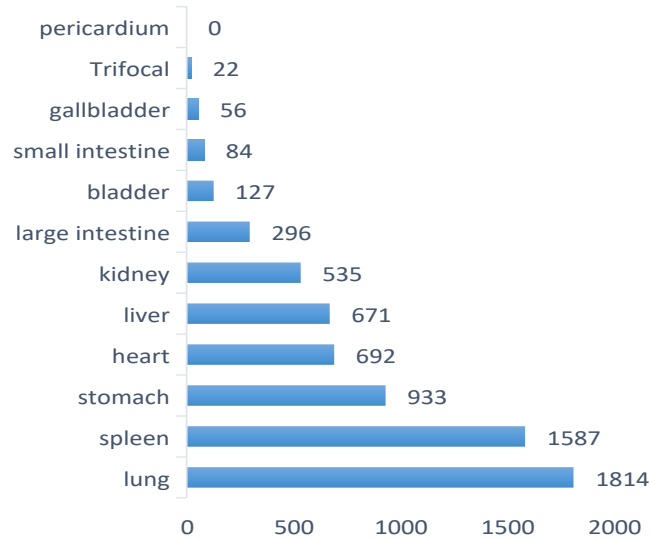


Figure 3: Bar chart of meridian regression statistics

4.4. Statistical analysis of drug efficacy

Table 4: Statistical table of drug efficacy

Serial No	effect	Frequency /time	Frequency%
1	Resolving phlegm, relieving cough and relieving asthma	680	23.14
2	Tonic class	656	22.33
3	Antipyretic	337	11.47
4	Hydrophilic and hygroscopic	311	10.59
5	Disjunctive class	272	9.26
6	Regulating Qi	211	7.18
7	Astringent	176	5.99
8	Activating Blood Circulation and Removing Blood Stasis	130	4.42
9	Hemostatic	97	3.30
10	Digestive	36	1.22
11	Liver calming and wind calming animals	14	0.48
12	Tranquilizers	10	0.34
13	Humidifying class	7	0.24
14	Expelling rheumatism	1	0.03

The efficacy categories are mainly expectorant, cough relieving and asthma relieving, asthenic tonic and heat clearing. (Table 4 and Figure 4)

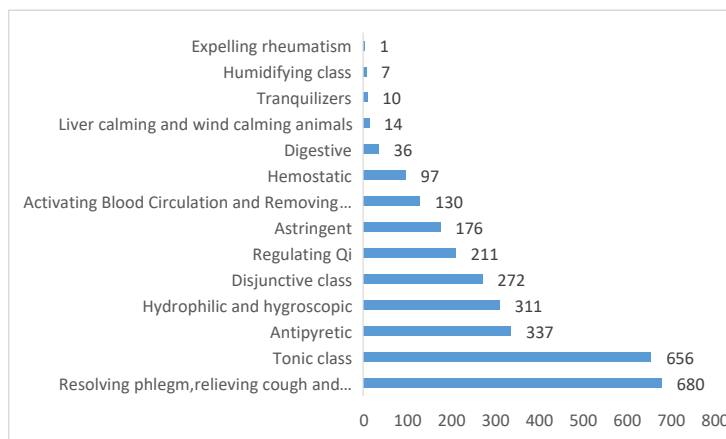


Figure 4: Power Statistics Bar Chart

4.5. Statistical analysis of drug combination based on association rules

Set the number of support degree as 140, and the confidence degree as 0.9, and get 14 groups of matching drugs, 27 groups of corner drugs, involving 6 traditional Chinese medicines.(Table 5 and Table 6)

Table 5: Statistical Table of Drug Frequency Distribution

Serial No	Name of drug	Frequency /time
1	Atractylodes macrocephala, licorice	147
2	Licorice, orange peel	146
3	Pinellia ternate, dried tangerine peel	146
4	Licorice, Pinellia ternate	146
5	Tangerine peel, poria cocos	145
6	Atractylodes macrocephala, dried tangerine peel	145
7	Licorice, Poria cocos	145
8	Atractylodes macrocephala, Pinellia ternate	145
9	Pinellia ternate, Poria cocos	145
10	Atractylodes macrocephala, Poria cocos	144
11	Atractylodes macrocephala, Fritillaria thunbergii	144
12	Licorice, Fritillaria thunbergii	142
13	Pinellia ternate, Fritillaria thunbergii	140
14	Orange peel, Fritillaria thunbergii	140

Table 6: Statistics of horn drug frequency distribution

Serial No	Horn drug name	Frequency /time
1	Licorice, Pinellia ternate, tangerine peel	146
2	Atractylodes macrocephala, Pinellia ternate, dried tangerine peel	145
3	Atractylodes macrocephala, licorice, Pinellia ternate, dried tangerine peel	145
4	Licorice, orange peel, poria cocos	145
5	Licorice, Pinellia ternate, Poria cocos	145
6	Atractylodes macrocephala, licorice, Pinellia ternate	145
7	Licorice, Pinellia ternate, tangerine peel, Poria cocos	145
8	Pinellia ternate, tangerine peel, poria cocos	145
9	Atractylodes macrocephala, licorice, dried tangerine peel	145
10	Atractylodes macrocephala, licorice, dried tangerine peel, poria cocos	144
11	Atractylodes macrocephala, licorice, Pinellia ternate, Poria cocos	144
12	Atractylodes macrocephala, licorice, poria cocos	144
13	Atractylodes macrocephala, licorice, Pinellia ternate, dried tangerine peel, Poria cocos	144
14	Atractylodes macrocephala, Pinellia ternate, Poria cocos	144
15	Atractylodes macrocephala, Pinellia ternate, dried tangerine peel, Poria cocos	144
16	Atractylodes macrocephala, tangerine peel, poria cocos	144
17	Atractylodes macrocephala, licorice, Fritillaria thunbergii	142
18	Licorice, tangerine peel, Fritillaria thunbergii	140
19	Atractylodes macrocephala, licorice, Pinellia ternate, dried tangerine peel, Fritillaria thunbergii	140
20	Licorice, Pinellia ternate, tangerine peel, Fritillaria thunbergii	140
21	Atractylodes macrocephala, licorice, dried tangerine peel, Fritillaria thunbergii	140
22	Atractylodes macrocephala, licorice, Pinellia ternate, Fritillaria thunbergii	140
23	Atractylodes macrocephala, Pinellia ternate, dried tangerine peel, Fritillaria thunbergii	140
24	Atractylodes macrocephala, Pinellia ternate, Fritillaria thunbergii	140
25	Atractylodes macrocephala, dried tangerine peel, Fritillaria thunbergii	140
26	Pinellia ternate, dried tangerine peel, Fritillaria thunbergii	140
27	Licorice, Pinellia ternate, Fritillaria thunbergii	140

4.6. Core categories of cluster analysis

K is set to 4. Four groups of core clusters were extracted, and the cluster analysis diagram and regression simulation display diagram were obtained in turn.(Table 7)

Table 7: Statistics of Core Categories

Serial No	Core parties	Number of prescriptions
1	Pinellia ternate, Poria cocos, Perilla leaf, Licorice, Platycodon grandiflorum, Fangfeng	35
2	Pinellia ternate, licorice, atractylodes macrocephala, dried tangerine peel, poria cocos, perilla leaf	57
3	Fritillaria thunbergii, Atractylodes macrocephala, Licorice, Pinellia ternate, Poria cocos, Platycodon grandiflorum	39
4	Atractylodes macrocephala, licorice, Pinellia ternate, Poria cocos, Fritillaria thunbergii, dried tangerine peel	19

5. Discussion

5.1. Phlegm and Blood Stasis Beat the Knot, Virtue Overwhelms Virtue, and Essence Deficiency Signs Aggressiveness

The name of lung cancer is not explicitly mentioned in the traditional Chinese medicine, which belongs to the category of "lung accumulation" in traditional Chinese medicine. The orthodox of surgery "the deficiency of positive qi leads to the formation of rocks". The deficiency of positive qi and the excess of evil are the key pathogenesis of lung cancer." People with deficiency of spleen and kidney and weak disorders often have accumulated diseases" in Jingyue Quanshu. Lung cancer is closely related to spleen and stomach weakness. Research ^[9] pointed out that the abnormal movement of qi, blood and body fluid was related to tumor. Epidemics ^[10] confirmed that the majority of cancer patients have phlegm-dampness constitution. Director Cao Liping believes that lung cancer is based on the deficiency of lung, spleen and kidney, phlegm and blood stasis are the key to evil and excess, and the pathological nature is based on deficiency and excess.

5.2. The medicine is gentle, cold and warm, and hard to use. It is usually treated from the lung and spleen

The result of drug attribute analysis showed that Mr.Cao mainly treated lung cancer with cold, warm and mild drugs. He believed that phlegm and blood stasis were common in lung cancer, and cold and heat were mixed, and advocated the combination of cold and warm. The five flavors are mainly pungent, bitter and sweet. The bitter taste can clear away heat and reduce qi, and relieve dampness and phlegm; Spicy taste can promote blood gas and regulate qi; The sweet taste harmonizes the medicinal properties, replenishes the deficiency and soothes. The meridian of lung, spleen and stomach are the main drugs. Lung cancer is located in the lung and is related to the spleen, stomach and kidney. The lung and spleen meridians are connected with each other, seeking the same gas, and maintaining the relationship between the same meridian and the same gas ^[11]; The spleen is the mother of the lung, and attention should be paid to cultivating soil and generating gold during treatment. The lung and stomach are connected by two meridians and separated by a membrane;" The cold diet enters the stomach, and the lung is cold from the lung pulse". The stomach is an important way for evil gas to invade the lung; The lungs and stomach should be descending as the order, and the opening as the harmony. Lung and kidney meridians are connected and closely connected; The efficacy categories are mainly resolving phlegm, relieving cough, relieving asthma, supplementing deficiency, and clearing heat, which reflect the deficiency of lung, spleen, and kidney in lung cancer, and phlegm and blood stasis are the key to evil and excess. The treatment is to strengthen the spleen and clear the lung, replenish deficiency and strengthen the right.

5.3. Focus on strengthening the spleen and clearing the lung, tonifying the deficiency and strengthening the integrity, and detoxification and turbidity

The results of medication frequency showed that the top 14 were atractylodes macrocephala,

licorice, stir-fried malt, pseudostellaria, cuttlebone, fangfeng, pinellia ternate, fritillaria thunbergii, perilla leaf, platycodon grandiflorum, orange peel, poria cocos, dandelion, and turmeric, reflecting the treatment principles of invigorating the spleen and clearing the lung, reinforcing the deficiency and strengthening the right, and detoxifying and removing blood stasis. This is the addition or subtraction of Zhiju Liujunzi Decoction, which is commonly used by Teacher Cao. If the patient has obvious symptoms of heat or yin deficiency, the Radix Pseudostellariae is often used to replace the Radix Codonopsis; If it is prone to diarrhea or loose stool, generally remove the orange peel. The study found that the volatile oil of *Atractylodes macrocephala* can slow down the proliferation and metastasis of tumor cells [12]; Fritillarine can reverse multidrug resistance of lung cancer cell lines [13].

The results of association rules show that Erchen Decoction is the basic prescription for Cao's treatment of lung cancer, which can strengthen the spleen and dissipate phlegm, regulate Qi and moderate. The study found that [14] Erchen Decoction can improve anorexia symptoms and inhibit tumor cell proliferation and metastasis. Teacher Cao pointed out that the spleen and stomach are the basis of the acquired nature, and people are based on water and grain. The spleen is responsible for transportation, the stomach is responsible for reception, the qi of the spleen and stomach is regulated smoothly, the essence of water and grain has the right to move, the viscera are harmonious and smooth, and the balance of yin and yang is stable.

5.4. Explore new ways, keep upright and innovate

Four potential core prescriptions were obtained by cluster analysis. The overall goal was to clear away lung heat and eliminate pathogenic factors, and to care for the spleen and stomach, replenish the deficiency and strengthen the health. The clinical medication was flexible and increased or decreased with the symptoms. Teacher Cao paid attention to symptoms, and added *Fritillaria thunbergii* and *Trichosanthes trichosanthes* to sputum; Phlegm white, clear and thin, itchy throat, itchy nose, perilla leaf and parsnip; The sputum is thick and yellow, with buckwheat, *houltuynia cordata* and white gourd kernel added; Blood thread in sputum, white ginger and agrimony; Hemoptysis plus *panax notoginseng* powder; The dry mouth was obviously added with *Radix Scrophulariae* and *Dendrobium*; Swallow itching, rash, locust flower and ground skin; In bad mood, acacia bark, tulips and cinnamon are added.

Professor Cao Liping uses traditional Chinese medicine to treat lung cancer, invigorate the spleen and clear the lung, replenish the deficiency and strengthen the right, detoxify and remove turbidity, regulate the qi, balance yin and yang, and strive to achieve the goal of removing evil, removing the right and calming itself. The prescription can be flexibly increased or decreased according to the symptoms, and the cold and warm can be used together with hard work. The prescription is peaceful, and the effect is outstanding.

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