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Original Article

Effect of qingfeixuanxie decoction on clinical symptoms, pulmonary function, and inflammatory reaction in patients with COPD in acute exacerbation

Yu Zhou[1], Yiqin Zhou[3], Shuangmei Yang[2]

[1]Department of Internal Medicine, Bo'ai Hospital, Majiang County, Guizhou Province, China; [2]Department of Pharmacy, Bo'ai Hospital, Majiang County, Guizhou Province, China; [3]Department of Traditional Chinese Medicine, Huimin Community Health Service Station, Kaili City, Guizhou Province, China

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Abstract: Objective: To study the effect of self-prepared Qingfeixuanxie Decoction on the clinical symptoms, lung function and inflammatory response of patients with chronic obstructive pulmonary disease (COPD) in the acute exacerbation stage (AECOPD). Methods: A total of 96 AECOPD patients were equally randomized into a control group and an observation group. Fourteen days after treatment, the clinical efficacy of the two groups was evaluated, and the clinical symptom scores, lung function, blood gas indicators, serum inflammatory response marker levels, the Self-Rating Anxiety Scale (SAS), the Self-Rating Depression Scale (SDS), the sleep quality score and quality of life score between the two groups before and after treatment were compared. Results: The total effective rate of the observation group was 91.67%, which was significantly higher than 72.92% of the control group ($P<0.05$); after treatment, the two groups obtained apparent mitigation in terms of the clinical symptoms, forced expiratory volume in the first second (FEV_1), FEV_1/forced vital capacity (FVC), partial pressure of carbon dioxide ($PaCO_2$), partial pressure of blood oxygen (PaO_2), arterial oxygen saturation (SaO_2), and serum interleukin-6 (IL-6), interleukin-8 (IL-8), C-reactive protein (CRP), tumor necrosis factor-α (TNF-α) expression levels compared to those before treatment ($P<0.05$), with better performance in the observation group than the control group ($P<0.05$). The SAS and SDS scores of the two groups of patients after treatment and 1 month after treatment showed a notable decrease ($P<0.01$). Patients in the observation group were recorded with higher sleep quality scores, shorter time to fall asleep, and longer sleep time than those in the control group. Higher scores of working conditions, life functions, and physical strength on the CCQQ scale than the control group were also observed in the observation group ($P<0.05$). Conclusion: Qingfeixuanxie Decoction can improve the clinical efficacy of patients with AECOPD, further mitigate the clinical symptoms and the lung functions of patients, and inhibit inflammatory reactions.

Keywords: Chronic obstructive pulmonary disease, acute exacerbation period, lung function, clinical symptoms, inflammatory reaction, combination of traditional Chinese and western medicine

Introduction

Chronic obstructive pulmonary disease (COPD), a common chronic disease of the respiratory system, seriously jeopardizes the physical and mental health of patients [1, 2]. COPD patients tend to progress into critical illnesses such as cor pulmonale and respiratory failure if the patients fail to receive timely treatment or are left unattended. In recent years, the incidence of COPD in China is rising [3, 4]. The complicated mechanism of COPD is mostly believed to be related to factors such as inflammation, oxidative stress, and disorder of anti-protease mechanisms [5, 6]. Under normal circumstances, the acute exacerbations of chronic obstructive pulmonary disease (AECOPD) can occur about 0.5 to 3.5 times per year [7, 8]. Therefore, preventing or reducing the occurrence of AECOPD is a key link to delay the progression of the patient's condition, improve the quality of life, and prolong the survival, as recurrence of AECOPD is an independent risk factor for the progression of COPD. Western medicine mainly adopts anti-infection, anti-cough, and other symptomatic interventions for the treatment of AECOPD, which can rapidly relieve the symp-

toms. However, its overall efficacy suffers a major setback with a high recurrence rate, distinct adverse reactions, and drug resistance. With the constant in-depth study of traditional Chinese medicine (TCM), its unique advantages in the treatment of AECOPD have been widely recognized. Modern pharmacological studies have proved that amygdalin in the amygdala can be hydrolyzed by acid, and the produced hydrocyanic acid and benzaldehyde exert an inhibitory effect on the respiratory center, which can deepen breathing, relieve coughing, and facilitate expectoration. Gualou decoction also has a certain inhibitory effect on a variety of bacteria. In general, Qingfei Decoction can substantially mitigate symptoms and is more effective in treating patients with phlegm-heat accumulated in the lungs in the AECOPD than conventional Western medicine treatment. In view of this, our hospital has self-prepared Qingfeixuanxie Decoction to treat AECOPD following the theory of TCM. This study innovatively used a variety of Chinese medicines in combination intending to provide a basis for clinical treatment of COPD.

Materials and methods

General information

A total of 96 AECOPD patients admitted to our hospital between January 2019 and January 2020 were enrolled and equally randomized into two groups. In the control group, there were 27 males and 21 females; the age was 44-75 years; the course of COPD was 3-12 years; the course of AECOPD was 1-3 days. In the observation group, there were 26 males and 22 females; the age was 45-76 years; the course of COPD was 4-12 years; the course of AECOPD was 1-5 days. This study strictly followed the requirements of the ethics committee and was approved by the ethics committee, with an approval number of 2018-12-11. https://clinicaltrials.gov/, ClinicalTrials.gov Identifier: NCT04710811.

Inclusion criteria

Diagnostic criteria followed *Chinese Expert Consensus on the Diagnosis and Treatment of Acute Exacerbation of Chronic Obstructive Pulmonary Disease (2017 Update)* [9]. Specific criteria: acute exacerbations such as dyspnea, coughing and sputum, wheezing and chest tightness, visible barrel chest, unvoiced sound on lung percussion, widened intercostal space on chest imaging examination, FEV_1/FVC <70%; blood routine examination showed an abnormal increase in CRP, white blood cell count, and neutrophil ratio. TCM diagnosis showed that the tongue was dry and less fluid, the color was red, and the pulse was magnificent and stringy.

Inclusion criteria: Patients who met the above diagnostic criteria, voluntarily participated and signed informed consent. Exclusion criteria: patients with other respiratory and pulmonary diseases, malignant tumor, with COPD in remission, respiratory failure, in the acute stage of cardiovascular and cerebrovascular adverse events, 7 days after surgery or trauma, acute infectious diseases, liver and kidney insufficiency, and/or heart diseases other than pulmonary heart disease caused by COPD, allergies, and contraindications to drugs or treatment methods involved in the study.

Methods

Control group: Conventional western medicine was given in the control group. A low flow of oxygen (1-3 L/min) inhalation was given and maintained and SaO_2 was monitored. Sustained-release theophylline tablets (SFDA approval number H44023791) 0.1 g/time were given, 2 times/d, orally, and the dose can be increased to 0.2 g/time if necessary. Budesonide inhalation (SFDA approval number H20130322) 1 mg, Ipratropium Bromide (SFDA approval number J20130135) 2 ml, 0.9% Sodium Chloride Injection (SFDA approval number H20056626) 3 ml, were fully mixed and used by aerosolized inhalation, 15 min/time, 3 times/d. Cefoperazone and Sulbactam Sodium for Injection (Supushen) (SFDA approval number H20020598) 3.0 g was added to 100 ml of 0.9% sodium chloride injection for intravenous drip, 1 time/12 h. The above treatment lasted for 14 days.

Observation group: On the basis of the control group, self-prepared Qingfeixuanxie Decoction was given in the observation group. The prescription consisted of 30 g Houttuynia cordata, 10 g almond, roasted licorice, moutan bark, red peony root, magnolia officinalis, thunbery fritillary bulb, earthworm, and roasted loquat, raw ephedra 6 g. Modification: Schizonepeta and Notopterygium 10 g each were added for those

with severe cold, headache, and joint muscle pain; 30 g each of rhizoma phragmitis and myotonin and 12 g seed of Chinese waxgourd were added for those with yellow phlegm; bryozoatum 30 g, perillaseed 10 g for those with thick sputum; 15 g poria, 12 g cortex mori radicis, 10 g alum processed pinellia for those with thin sputum; 10 g cistanche salsa and fructus cannabis for constipation. The medicament was decocted with water and leached twice for collecting a decoction of 500 ml in total, twice a day by oral for two weeks.

Observation indicators

After 14 days of treatment, the clinical efficacy of the two groups was evaluated, and the changes in clinical symptom scores, lung function, blood gas indicators, and serum inflammatory response marker levels before and after treatment were observed.

The clinical efficacy was evaluated according to the relevant standards of *Guidelines for the Diagnosis and Treatment of Chronic Obstructive Pulmonary Disease (2013 Revised Edition)* [10]. Markedly effective: all symptoms and signs were improved significantly, and the frequency of cough and sputum reduced by 2/3 or more; effective: all symptoms and signs were alleviated, and the frequency of cough and sputum reduced by 1/3 to 2/3; ineffective: patients failed to meet the above standards or worse than before treatment. The total effective rate = (markedly effective + effective)/total number × 100%. The clinical symptom score was calculated according to the standard stipulated by *Evidence-based Clinical Practice Guidelines of Traditional Chinese Medicine (Traditional Chinese Medicine)* [11]. Clinical symptoms include cough, expectoration, wheezing, chest distress, and anorexia. 0 point was considered none, 1 point was considered mild, 2 points considered moderate, and 3 points considered severe.

A non-invasive pulmonary function tester was used to test the pulmonary function indicators including FEV_1, FEV_1/FVC levels. A blood gas analyzer was used to detect the patient's blood gas indicators including $PaCO_2$, PaO_2, and SaO_2 levels. Serum inflammatory response markers included IL-6, IL-8, CRP, TNF-α. 3 ml fasting cubital venous blood samples were collected from two groups of patients before and after treatment, rested still, and then centrifuged at 3000 r/min for 15 min. Then, the serum was obtained and tested by the Enzyme-Linked ImmunoSorbent Assay (ELISA) method. The process was in strict accordance with kit instructions.

SAS and SDS were employed to assess the mental status of patients before and after treatment and one month after treatment in the outpatient clinic. The sleep quality score after treatment included three indicators: time to fall asleep, sleep time, and sleep quality. A higher sleep quality score indicates a shorter falling asleep time, a longer sleep time, and a better sleep quality. The quality of life after treatment was evaluated using the CCQQ scale, including working conditions, life functions, and physical strength.

Statistical analysis

SPSS 23.0 software was used for data analysis. Rank sum test was employed for rank data. The chi-square test was for count data, which were expressed as n (%). The comparison of measurement data within groups was performed by paired t-test, and comparison between groups was performed by independent t-test, expressed as ($\overline{x}$±sd). $P<0.05$ was considered statistically significant.

Results

Clinical data

The patients were comparable between two groups with regard to general information ($P>0.05$). See **Table 1**.

Clinical efficacy

The observation group obtained a higher total effective rate of 91.67% in comparison with the rate of 72.92% in the control group ($P<0.05$), see **Table 2**.

Clinical symptom score

Before treatment, the two groups identified no significant difference in various clinical symptoms ($P>0.05$); after treatment, the scores of cough, sputum, wheezing, chest distress, and anorexia in the two groups all garnered a remarkable optimization ($P<0.05$), in which a

Table 1. Comparison of clinical data between the two groups of patients

Index	Control group (n=48)	Observation group (n=48)	t/Z	P
Years	61.36±5.98	62.04±6.12	3.455	0.335
Course of COPD	6.38±1.92	6.47±1.98	2.574	0.453
Course of AECOPD	2.09±0.87	2.11±0.92	1.354	0.474
Pulmonary function classification			1.362	0.365
Grade I	16	14		
Grade II	24	25		
Grade III	8	9		

Note: COPD, chronic obstructive pulmonary disease; AECOPD, acute exacerbation stage.

Table 2. Comparison of clinical efficacy between the two groups [n (%)]

Groups	n	Markedly effective	Effective	Ineffective	Total effective rate
Control group	48	20 (41.67)	15 (31.25)	13 (27.08)	35 (72.92)
Observation group	48	28 (58.33)	16 (33.33)	4 (8.33)	44 (91.67)
Z/x^2			-2.132		5.790
P			0.033		0.016

Table 3. Comparison of clinical symptom scores between the two groups before and after treatment ($\bar{x}$±sd, points)

Groups	n	Time	Cough	Expectoration	Wheezing	Chest Distress	Anorexia
Control group	48	Before treatment	2.48±0.61	2.79±0.55	2.57±0.64	2.15±0.68	2.32±0.74
		After treatment	1.69±0.57	1.84±0.46	1.43±0.42	1.32±0.63	1.56±0.52
		t	6.815	9.536	10.085	5.72	5.972
		p	0.001	0.002	0.001	0.003	0.001
Observation group	48	Before treatment	2.51±0.64	2.81±0.64	2.59±0.80	2.18±0.75	2.36±0.71
		After treatment	1.09±0.60	0.74±0.28	1.07±0.36	0.96±0.36	1.13±0.41
		t	12.366	22.888	12.37	10.379	11.775
		p	0.002	0.003	0.001	0.001	0.006
Before treatment		*t*	0.241	0.132	0.134	0.184	0.278
		p	0.81	0.896	0.893	0.855	0.782
After treatment		*t*	5.078	14.218	4.531	3.51	4.443
		p	0.001	0.002	0.001	0.001	0.002

more notable improvement was recorded in the observation group (P<0.05), see **Table 3**.

Lung function indicators

Before treatment, no observable difference was seen in lung function indexes between the two groups (P>0.05); after treatment, the FEV_1, FEV_1/FVC of the two groups of patients showed a spike (P<0.05), with better results observed in the observation group (P<0.05). See **Table 4**.

Blood gas index

Before treatment, the blood gas indexes were not statistically different in the two groups (P>0.05); after treatment, the two groups all received a remarkable amelioration concerning $PaCO_2$, PaO_2, and SaO_2 (P<0.05), in which the observation group demonstrated lower $PaCO_2$ (P<0.05), and higher PaO_2 and SaO_2 (P<0.05). See **Table 5**.

Inflammatory response indicators

The inflammatory response indexes did not differ between the two groups before treatment (P>0.05); after treatment, the expression levels of IL-6, IL-8, CRP, and TNF-α in the two groups were recorded with apparent mitigation (P< 0.05), which also revealed a lower level of the

Table 4. Comparison of lung function indexes between the two groups before and after treatment ($\bar{x}$ ±sd)

Groups	n	Time	FEV_1 (L)	FEV_1/FVC (%)
Control group	48	Before treatment	1.82±0.24	60.97±3.28
		After treatment	2.13±0.30	65.67±3.65
		t	5.614	6.959
		P	0.000	0.000
Observation group	48	Before treatment	1.80±0.25	60.54±2.55
		After treatment	2.55±0.36	69.94±3.85
		t	13.011	13.524
		P	0.000	0.000
Before treatment		*t*	0.404	0.722
		P	0.687	0.472
After treatment		*t*	6.178	5.582
		P	0.000	0.000

Note: FEV_1, forced expiratory volume in the first second; FVC, FEV_1/forced vital capacity.

Table 5. Comparison of blood gas indexes between the two groups before and after treatment ($\bar{x}$ ±sd)

Groups	n	Time	$PaCO_2$ (mmHg)	PaO_2 (mmHg)	SaO_2 (%)
Control group	48	Before treatment	65.20±5.25	46.44±5.94	76.07±6.68
		After treatment	56.26±3.39	71.07±6.87	88.35±4.97
		t	9.341	22.990	10.031
		P	0.000	0.000	0.000
Observation group	48	Before treatment	65.31±6.51	45.95±5.2	75.96±5.29
		After treatment	47.15±2.56	83.95±7.12	93.43±3.87
		t	17.731	29.199	19.368
		P	0.000	0.000	0.000
Before treatment		*t*	0.092	0.429	0.092
		P	0.927	0.669	0.927
After treatment		*t*	14.842	9.012	5.584
		P	0.000	0.000	0.000

Note: $PaCO_2$, partial pressure of carbon dioxide; PaO_2, partial pressure of blood oxygen; SaO_2, arterial oxygen saturation.

above indicators in the observation group (P<0.05, **Table 6**).

Adverse reactions

Adverse reactions in the two groups witnessed spontaneous remission and no trace of progression. In the control group, only mild diarrhea, nausea, skin reactions, and mild liver function abnormalities were seen, with the incidence of adverse reactions of 18.75% (9/48); in the observation group, only mild diarrhea, skin reactions, and mild liver function abnormalities were seen, with the incidence of adverse reactions of 14.58% (7/48) (x^2=0.300, P=0.584>0.05).

SAS and SDS scores

The SAS scores of the observation group after treatment and one month after treatment were 39.40±6.35 points and 35.60±4.32 points, which were evidently lower than the scores of 59.80±11.36 points before treatment (t= 1.356, 2.541, P<0.01). Similar results were also obtained in the control group, with a score of 43.60±7.14 after treatment and 39.00±4.12 one month after treatment versus the score of 60.10±11.11 before treatment (t=1.856, 3.541, P<0.01). Comparison of patients between the two groups after operation and one month after operation was conducted and significantly better results were obtained in the

Table 6. Comparison of inflammatory response indexes between the two groups before and after treatment ($\bar{x}$±sd)

Groups	n	Time	IL-6 (μg/L)	IL-8 (μg/L)	CRP (mg/L)	TNF-α (μg/L)
Control group	48	Before treatment	56.98±2.23	30.95±2.06	8.73±1.12	64.93±5.25
		After treatment	41.35±2.22	17.36±1.74	6.72±1.00	37.12±3.81
		t	30.835	32.438	8.851	33.128
		p	0.000	0.000	0.000	0.000
Observation group	48	Before treatment	57.31±2.24	31.13±2.40	8.79±0.95	65.07±6.49
		After treatment	33.29±1.29	12.28±1.79	5.14±0.61	30.75±3.20
		t	66.916	43.743	20.914	36.166
		p	0.000	0.000	0.000	0.000
Before treatment		*t*	0.708	0.400	0.306	0.118
		p	0.481	0.690	0.760	0.906
After treatment		*t*	21.717	14.123	9.359	8.862
		p	0.000	0.000	0.000	0.000

Note: IL-6, interleukin-6; IL-8, interleukin-8; CRP, C-reactive protein; TNF-α, tumor necrosis factor-α.

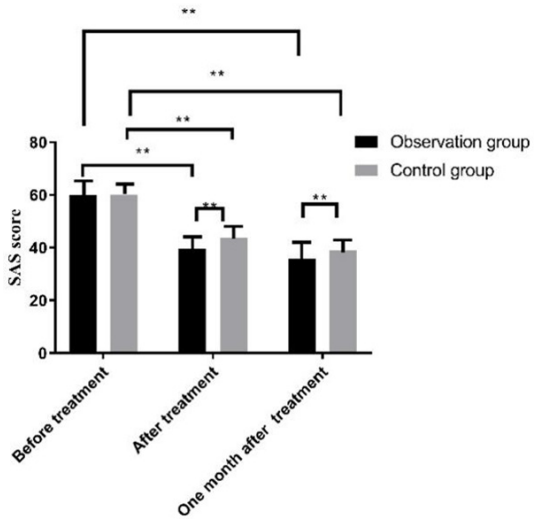

Figure 1. Comparison of SAS scores between the two groups of patients at different time points. Note: SAS, Self-Rating Anxiety Scale.

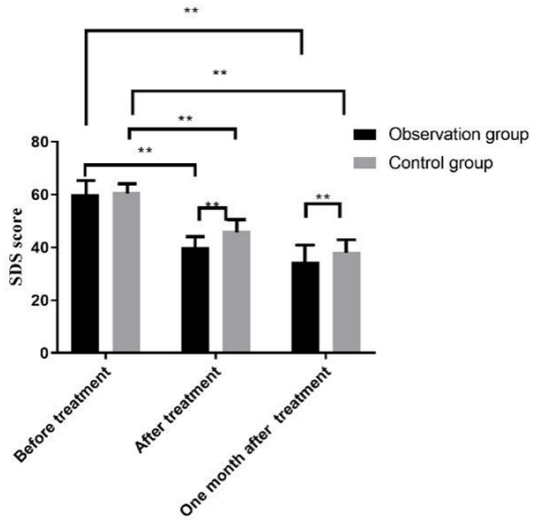

Figure 2. Comparison of SDS scores between the two groups of patients at different time points. Note: SDS, Self-Rating Depression Scale.

observation group (t=4.256 and 2.641, P< 0.01).

The SDS scores of patients in observation group after treatment and one month after treatment were 40.10±5.35 points and 34.60± 3.22 points, which were evidently lower than the scores of 60.11±10.36 points before treatment (t=6.356, 5.541, P<0.01). Similar results were also obtained in the control group, with a score of 46.60±5.14 after treatment and 38.40±3.92 one month after treatment versus the score of 61.00±10.98 before treatment (t=3.656, 4.541, P< 0.01). These results are shown in **Figures 1** and **2**.

Comparison of patients between the two groups after operation and one month after operation was conducted and significantly better results were obtained in the observation group (t=6.356 and 3.641, P<0.01).

Sleep quality score

Patients in the observation group garnered shorter time to fall asleep, longer sleep time,

Table 7. Comparison of sleep scores between the two groups (points, $\bar{x}\pm sd$)

Group	n	Time to fall asleep	sleeping time	Sleep quality
Observation group	48	1.67±0.23	1.59±0.20	1.55±0.18
Control group	48	1.44±0.12	1.39±0.11	1.26±0.13
t		1.365	2.140	3.690
P		0.001	0.002	0.001

Table 8. Comparison of the quality of life scores between the two groups (points, $\bar{x}\pm sd$)

Group	n	Working conditions	Life function	Physical strength
Observation group	48	5.61±0.32	9.87±0.31	17.61±0.43
Control group	48	3.78±0.23	6.3±0.20	9.55±0.38
t		3.165	1.240	6.390
P		0.001	0.002	0.001

and higher sleep quality scores than those of the control group (P<0.05, **Table 7**).

Quality of life score

Higher scores of working conditions, life functions, and physical strength on the CCQQ scale of the observation group were observed as compared with those of the control group (P<0.05, **Table 8**).

Discussion

COPD is a chronic inflammatory disease characterized by persistent airflow limitation [12, 13] that leads to a reduced activity endurance of patients and serious adverse effects on daily life. The patients' ability to work may even be deprived by the progression of the disease which may give rise to secondary respiratory failure, pulmonary heart disease, or even death [14, 15]. Moreover, the relatively long course of this disease also imposes a heavy burden on both the patients and their families. AECOPD refers to the acute exacerbation of COPD patients caused by various reasons [16].

Moreover, after a long-term administration of western medicine, the efficacy was undermined by drug resistance and obvious adverse reactions. With the continuous in-depth study of TCM, it has exhibited huge advantages and has become increasingly prominent. TCM theory believes that the disease belongs to the categories of lung distension, asthma, cough, and phlegm [17]. This disease is presented as asthenia both in origin and superficiality [18]. Its acute exacerbation is mostly induced by occasional external pathogen factors or internal accumulation of phlegm and dampness. Therefore, treatment should focus on clearing away heat and moisturizing dryness, promoting lung and qi, and relieving asthma.

The Qingfeixuanxie Decoction prepared by our hospital uses raw ephedra as its chief medicine. The raw ephedra has a pungent and bitter taste and is warm in nature. It distributes to the lung and bladder meridian and has the effects of facilitating the lungs and relieving asthma, inducing sweat and dispelling exogenous evils, and promoting diuresis to alleviate edema. It is mostly used for the treatment of cold, asthma, chest distress, wind water puffy swelling, bronchitis, bronchial asthma, and other diseases. Almonds, earthworms, magnolia officinalis, fritillary bulb, and roasted loquat leaves were taken as the ministerial drugs. Almonds taste bitter, lukewarm in nature, which ease the lungs and the large intestine meridian. It has the effects of lowering qi, calming panting and suppressing cough, and is laxative. Earthworm is salty and cold. It enters the liver, spleen and bladder meridian, and can clear heat and eliminate wind, dredge the meridians, relieve asthma, and diuretic. Magnolia has a pungent and bitter taste, and is warm in nature. It distributes to the lung, spleen, stomach, and large intestine meridian, and has the function of lowering qi to relieve fullness and eliminate phlegm damp-drying, mostly used in the treatment of dampness, constipation, cough and phlegm, etc. Fritillary bulb has a bitter taste, and is cold in nature. It distributes to heart and lung meridian, has the effects of resolving phlegm and clearing heat, relieving cough and dispelling congestion, and is used for eliminating thick phlegm. Red peony root and tree peony peel are adjuvants for clearing heat and cooling blood, promoting blood circulation, and removing blood stasis. Red peony has a bitter taste and distributes to the liver meridian. It has the effects of clearing heat and removing blood stasis, cooling blood, and relieving pain. It is often used for the treatment of damp toxin

accumulation, vomiting, and bleeding. Moutan bark tastes pungent, bitter, slightly cold in nature. It distributes to heart, kidney, and liver meridian, has the effects of promoting blood circulation, removing blood stasis, clearing heat and cooling blood, and is used for the treatment of heat entering construction-blood, vomiting blood, carbuncle, and sore. Modern pharmacological research believes that paeonol and red peony have a killing effect on a variety of bacteria. Houttuynia cordata is introduced into the lungs as a medicine. Houttuynia cordata is cold in nature, pungent in taste, and distributes to the lung meridian. The medicine has the effects of clearing heat and detoxification, diuresis and dehumidification, reducing swelling and sores, and improving digestion. Licorice is sweet in taste, calm in nature, distributes to the spleen, lung, and stomach meridian. It can invigorate the spleen and qi, clear away heat and detoxification, moisten the lungs and relieve cough, and reconcile various drugs. The SAS and SDS scores of the two groups of patients after treatment and 1 month after treatment both witnessed a tumble ($P<0.01$). Patients in the observation group all yielded a more promising outcome regarding the time to fall asleep, sleep time, and the sleep quality scores than the control group. Similar results have also been recorded in the comparison of working conditions, life functions, and physical strength scores in the CCQQ scales.

We found that the clinical efficacy of Qingfeixuanxie Decoction in the observation group was superior, suggesting that this prescription yields the effect of improving the clinical efficacy of AECOPD. After treatment, the scores of cough, sputum expectoration, wheezing, chest distress, and anorexia of the observation group were lower than those of the control group, suggesting that this prescription can further relieve the clinical symptoms of the patients. The FEV_1 and FEV_1/FVC of the observation group were better, indicating that Qingfeixuanxie Decoction can effectively enhance the lung function of patients with AECOPD, so it can comprehensively optimize the blood gas indicators of the patients, and abate the patients' hypoxia state. After treatment, the observation group demonstrated lower serum levels of IL-6, IL-8, CRP, and TNF-α, suggesting that Qingfeixuanxie Decoction can more effectively inhibit the inflammatory response in patients with AECOPD, thereby relieving the symptoms of inflammatory edema and excessive inflammatory exudate. This should also be the main mechanism for Qingfeixuanxie Decoction to achieve rosy results in the treatment of AECOPD. It can be seen through comparison that there is no statistical difference in adverse reactions between the two groups, indicating that the combination of drugs will not increase the risk of adverse reactions, which confirms the safety and feasibility of the therapy. Similar to the study of Zhong et al. [19], TCM decoction can significantly reduce the level of procalcitonin in patients with AECOPD, predominantly improve respiratory function and blood gas analysis indicators, and remarkably abate clinical symptoms, which is worthy of promotion. Hua et al. [20] believed that Yiqi Qingfei Decoction combined with standardized treatment of AECOPD can significantly improve the clinical symptoms, blood gas analysis, and lung function of patients. The limitation of this study lies in the absence of following up on the long-term efficacy. Qingfeixuanxie Decoction can improve the clinical efficacy of AECOPD patients, further reduce the clinical symptoms and lung function of patients, and inhibit inflammation, but its long-term efficacy remains to be confirmed. Therefore, the number of patients will be expanded and the follow-up time will be extended to obtain more clinical data.

In summary, Qingfeixuanxie Decoction can dramatically improve the clinical efficacy of patients with acute exacerbation of COPD, further reduce the clinical symptoms of the patients, ameliorate the lung function of the patients, and substantially inhibit the inflammatory response of the patients.

Disclosure of conflict of interest

None.

Address correspondence to: Yu Zhou, Department of Internal Medicine, Bo'ai Hospital, Majiang County, Guizhou Province, China. Tel: +86-13985836000; E-mail: zhouyu520520520@163.com

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