

Analysis of the Clinical Efficacy of Buzhong Yiqi Decoction in the Treatment of Mild COVID-19

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Abstract: *Objective:* To explore the clinical significance of Buzhong Yiqi decoction in treating patients with mild COVID-19. *Methods:* 88 patients with mild COVID-19 admitted to the hospital for outpatient treatment from December 2022 to July 2023 were selected as the research subjects. They were divided into two groups through random number generator. The control group was given conventional Western medicine treatment, while the observation group was given Buzhong Yiqi decoction combined treatment. The effects of the two types of treatment were compared and analyzed. *Results:* Before treatment, there was no difference in inflammatory indicators between the two groups ($P > 0.05$); after treatment, the C-reactive protein (CRP), white blood cells (WBC), and interleukin-6 (IL-6) levels of the observation group were lower than those of the control group ($P < 0.05$). The treatment received in the observation group was significantly more effective than the treatment received in the control group ($P < 0.05$). There was no difference in the scores of the traditional Chinese medicine syndrome scale between the two groups before treatment ($P > 0.05$). The scores for fatigue, sputum, cough, and fever of the observation group after treatment were all lower than those of the control group ($P < 0.05$). However, there was no statistically significant difference in the incidence of adverse reactions between the two groups ($P > 0.05$). *Conclusion:* Buzhong Yiqi Decoction can reduce symptoms and improve the body's inflammatory response of patients with mild COVID-19 patients.

Keywords: Novel coronavirus pneumonia; Buzhong Yiqi decoction; TCM syndrome scale; Inflammatory factors

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1. Introduction

Coronavirus Disease 2019 (COVID-19) is an acute infectious disease of the respiratory tract that is caused by the SARS-CoV-2 virus^[1,2]. This virus is transmitted through close contact and respiratory droplets and it is highly contagious. Its symptoms include dry cough, fatigue, and fever. Some patients may experience gastrointestinal symptoms and symptoms such as muscle aches, sore throat, runny nose, and nasal congestion. Hypoxemia, dyspnea or multiple organ failure, bleeding and coagulopathy, uncorrectable metabolic acidosis, and sepsis may also occur as the condition worsens. In severe cases, it may lead to shock and acute respiratory distress, which are life-threatening^[3]. Studies have found that patients with mild COVID-19 generally have no symptoms of pneumonia and usually only experience mild fatigue and mild fever. Most patients have a good

prognosis, while some have more severe after effects, especially those with underlying diseases or older patients [4]. COVID-19 can be divided into 4 levels of severity: critical, severe, ordinary, and mild. Western medical treatment involves the use of antibacterial drugs, antiviral, oxygen therapy, and supportive therapy. If the patient is critically ill, treatment options such as immunotherapy, blood purification treatment, convalescent plasma treatment, renal replacement therapy, circulatory support, and respiratory support are employed. In contrast, traditional Chinese medicine (TCM) treatment involves using Chinese patent medicines such as Xuebijing injections or decoctions such as Qingfei Paidu decoction and Buzhong Yiqi decoction, which are all proven effective [5]. Therefore, in this study, the effect of Buzhong Yiqi Decoction in treating mild patients with new coronavirus pneumonia was analyzed.

2. Materials and methods

2.1. General information

In this study, 88 patients with mild COVID-19 that admitted to the hospital for outpatient treatment from December 2022 to July 2023 were selected for this study. They were divided into two groups through a random number generator, with 44 patients in each group. The ages of the patients in the control group ranged from 20 to 65 years old, with an average of 42.3 ± 6.1 years, including 18 females and 26 males. The ages of the patients in the observation group ranged from 22 to 67 years old, with an average of 42.5 ± 6.2 years, including 17 females and 27 males.

Inclusion criteria: (1) Patients with varying degrees of respiratory symptoms and fever that are consistent with the “COVID-19 Diagnosis and Treatment Plan (Trial Version 6)” [6] and the “Shanghai TCM Diagnosis and Treatment Plan for COVID-19; (2) patients who met the relevant standards in “Trial Implementation” [7]; (2) Patients who were ≥ 18 years old; (3) patients who were conscious and could communicate normally. Exclusion criteria: (1) Children or pregnant women; (2) patients with severe organ diseases such as heart, liver, and kidney disease; (3) patients with Alzheimer’s disease, mental illness, autoimmune diseases, and malignant tumors; (4) patients who dropped out of the study or had incomplete data.

There was no difference in data between the two groups ($P > 0.05$), indicating comparability.

2.2. Method

2.2.1. Control group

The patients of the control group underwent conventional Western medicine treatment, which included resting, formulating a diet plan, sufficient caloric intake, and the oral administration of 200mg Arbidol (three times/d). The treatment lasted for seven days.

2.2.2. Observation group

Based on the above treatment, the observation group was treated with Buzhong Yiqi decoction. The essential prescriptions were as follows: 3 g each of Bupleurum, Cimicifuga, *Angelicae sinensis*, tangerine peel, fried Atractylodes, and ginseng; 5 g of roasted licorice, 10 g of honey-roasted Astragalus. The amount of each ingredient can be increased or decreased according to symptoms. If the patient had yin deficiency and lung dryness, 15 g each of Lily and *Rehmannia glutinosa* were added. If the patient had phlegm-heat stagnation in the lungs, 15 g Trichosanthes were added. The ingredients were decocted in cold water, and 200 mL of the decoction were extracted and consumed, 100 mL/time, two times/d – once in the morning and once in the evening for seven days.

2.3. Observation indicators

(1) Inflammation indicators: 3 mL of cubital venous blood were collected. The blood samples were centrifuged for 10 minutes at 3000 r/min, the upper serum was extracted for analysis. The C-reactive protein (CRP) using conventional methods, and the white blood cell count (WBC) and interleukin-6 (IL-6) were measured; (2) Based on the “Guiding Principles for Clinical Research of New Traditional Chinese Medicines (Trial)” [8], a TCM syndrome scale was established, including fatigue, sputum, cough, and fever; the scores for each item ranged from 0–4 points depending on the severity of the symptoms. 3 points were given for severe symptoms, 2 points for moderate symptoms, 1 point for mild symptoms, and 0 for none. (3) During the treatment period, the adverse reactions of the two groups were recorded, including diarrhea, loss of appetite, and stomach pain.

2.4. Criteria for judging efficacy

The patients were considered fully recovered when two throat swab tests were negative, and there were no symptoms such as diarrhea, headache, dyspnea, or fever in the last three days [9].

2.5. Statistical analysis

χ^2 and *t*-tests were used to compare count data and measurement data between the two groups. $P < 0.05$ was used to indicate statistical significance.

3. Results

3.1. Comparison of cure rates between the two groups

After seven days of treatment, 40 patients in the observation group fully recovered, with a cure rate of 90.91% (40/44); while 30 cases in the control group fully recovered, with a cure rate of 68.18% (30/44). The difference between the cure rates of the two groups were statistically significant ($P < 0.05$).

3.2. Changes in inflammatory factors in the two groups before and after treatment

There was no difference in inflammatory factor indicators between the two groups before treatment ($P > 0.05$); IL-6, CRP, and WBC in the observation group were all lower than those in the control group after treatment ($P < 0.05$), as shown in **Table 1**.

Table 1. Comparison of inflammatory factors between the two groups (mean \pm standard deviation)

Group	CRP (mg/L)		WBC ($\times 10^9/L$)		IL-6 (ng/L)	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Control group (<i>n</i> = 44)	4.67 \pm 1.55	2.73 \pm 1.18	16.28 \pm 3.82	9.34 \pm 2.02	110.36 \pm 22.74	54.28 \pm 12.02
Observation group (<i>n</i> = 44)	4.69 \pm 1.57	1.32 \pm 0.44	16.93 \pm 3.67	5.02 \pm 2.18	110.87 \pm 21.75	32.45 \pm 11.81
<i>t</i>	0.664	9.053	1.197	5.287	0.753	6.228
<i>P</i>	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05

3.3. Changes in TCM syndrome scores before and after treatment in the two groups

Before treatment, there was no difference in the scores between the two groups ($P > 0.05$); after treatment, compared with the control group, the fatigue, sputum expectoration, fever, and cough scores of the observation group all decreased, and the comparison between the groups was statistically significant ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of TCM syndrome scores between the two groups (mean ± standard deviation, points)

Group	Weakness		Expectoration		Cough		Fever	
	Before treatment	After treatment						
Control group (n = 44)	1.28 ± 0.73	0.68 ± 0.31	1.17 ± 0.43	0.45 ± 0.11	2.67 ± 0.84	0.92 ± 0.33	1.38 ± 0.54	0.83 ± 0.24
Observation group (n = 44)	1.31 ± 0.74	0.17 ± 0.22	1.19 ± 0.55	0.02 ± 0.14	2.69 ± 0.82	0.59 ± 0.23	1.41 ± 0.57	0.11 ± 0.15
<i>t</i>	0.764	9.266	1.083	6.383	0.912	6.112	0.254	7.365
<i>P</i>	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05

3.4. Comparison of adverse reactions between the two groups

Adverse reactions such as diarrhea and loss of appetite occurred during the treatment in both groups, with no statistical differences in the incidence rates ($P > 0.05$), as shown in **Table 3**.

Table 3. Comparison of adverse reactions between the two groups (n [%])

Group	Diarrhea	Decreased appetite	Stomachache	Incidence rate
Control group (n = 44)	2 (4.55)	3 (6.82)	2 (4.55)	7 (15.91)
Observation group (n = 44)	1 (2.27)	2 (4.55)	1 (2.27)	4 (9.09)
χ^2 value				0.654
<i>P</i>				> 0.05

4. Discussion

As a highly contagious respiratory disease, COVID-19 spreads through fecal-oral, aerosol, close contact, and respiratory droplets. It can affect the kidneys, gallbladder, liver, and heart, so as the spleen and lungs. However, the pathological changes are different for each patient, and their clinical manifestations are also somewhat different. Its symptoms are mainly fatigue, dry cough, and fever. Besides, it has an incubation period of 1–14 days^[10]. In TCM, the lungs are considered the leading disease site for COVID-19. Its pathogenesis characteristics include blood stasis, poison, heat, and dampness because a spleen and stomach deficiency can lead to insufficient lung qi, and the lungs are the foundation of qi. Deficiency of the spleen will lead to the invasion of external evils, so treatment follows the basic principles of dispersing cold, relieving the surface, removing blood stasis, and removing dampness^[11,12]. Buzhong Yiqi decoction was used in this study, which composed of angelica, bupleurum, dried tangerine peel, cohosh, astragalus, roasted licorice, ginseng, and fried Atractylodes. Among them, astragalus is the king medicine with anti-fatigue, toxin-supporting properties as it strengthens the muscles and the immune system. Ginseng can restore pulse, strengthen the pulse and replenish vitality. Stir-fried Atractylodes has the effect of antiperspirant, removing dampness and diuresis, nourishing qi, and strengthening the spleen. Tangerine peel can remove dampness and phlegm, regulate qi, and strengthen the spleen. Cimicifugae Rhizoma can clear away heat and has a detoxification effect, and it also replenishes qi and yang. Bupleurum has the effects of nourishing yang, reducing fever, soothing the liver and relieving depression. prepared licorice can harmonize various medicines and provide a comprehensive prescription^[13,14]. Together, they have the effects of nourishing qi and blood, replenishing qi, relieving cough, and eliminating phlegm. At the same time, modern pharmacological research showed that the active ingredients of ginseng, Atractylodes, and Astragalus can enhance the phagocytosis of viruses and bacteria by the reticuloendothelial system and

monocyte-macrophages and improve human immune function. In particular, *Astragalus* has a two-way regulatory effect, in which it can reduce the level of inflammatory factors in the body, alleviate inflammation, improve the body's internal environment, and restore bodily functions^[15].

In summary, Buzhong Yiqi Decoction can reduce the body's inflammatory response, improve symptoms, and improve the treatment effect of mild COVID-19 patients. It also does not increase the rate adverse reactions. Therefore, this treatment method is safe and should be popularized.

Disclosure statement

The author declares on conflict of interest.

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