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Analysis of the Effect of Danshen Polyphenols Combined with Doxofylline in Treating Chronic Pulmonary Heart Disease Patients in the Compensated Stage

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Abstract: *Objective*: To analyze the effect of Danshen polyphenols combined with doxofylline treatment in patients with chronic pulmonary heart disease in the compensated stage. *Methods:* 76 patients with chronic pulmonary heart disease in the compensated stage were selected from January 2023 to January 2024 as the study subjects, and they were divided into a study group and a reference group through a random number table. the study group was treated with Danshen polyphenols combined with doxorubicin while the reference group was treated with conventional treatment, and the treatment effects of the two groups were compared. *Results*: The patients in the study group were treated with Danshen polyphenols combined with doxorubicin, and the maximal ventilation was 73.26 ± 4.83 L/min, the left ventricular ejection fraction was 56.14 ± 1.98 %, and the total effective rate of the treatment was 94.74%, which were all significantly better than those of the reference group ($P < 0.05$), which is statistically significant. *Conclusion*: Danshen polyphenols combined with doxofylline treatment resulted in an improvement in maximum ventilation and left ventricular ejection fraction, and its overall efficacy is also higher than conventional treatment in treating chronic pulmonary heart disease in the compensated stage.

Keywords: Danshen polyphenols; Doxofylline; Chronic pulmonary heart disease; Compensatory phase

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1. Introduction

Chronic pulmonary heart disease mainly includes the compensatory period of pulmonary heart function and the compensatory period of pulmonary heart function. Patients in the compensatory stage of pulmonary heart function usually have symptoms such as coughing, fatigue, dyspnea, and palpitations. If not treated in time, heart failure and respiratory failure may occur. has a better effect on the treatment of the compensatory phase of the disease. In this study, 76 patients with chronic pulmonary heart disease in the compensated stage who came to our hospital from January 2023 to January 2024 were selected to study the efficacy of Tansy polyphenols

combined with doxofylline treatment on the disease.

2. Information and methods

2.1. General information

Seventy-six patients were selected for the study from patients with chronic pulmonary heart disease in the compensated stage who came to our hospital from January 2023 to January 2024, and their general information is shown in **Table 1**.

Table 1. General information about the study subjects

Group	Male patients	Female patients	Age (years)	Average age (years)
Study group (38 cases)	20 cases	18 cases	47–84	62.2 ± 8.4
Reference group (38 cases)	19 cases	19 cases	46–85	64.1 ± 7.6

The consent of the patients and their families was obtained for this study. There was no statistically significant difference between the general information of the above two groups ($P > 0.05$).

2.2. Methods

2.2.1. Reference group

Patients in the reference group were treated conventionally with cardiotonic agents, diuretics, anti-inflammatories, and medications for water-electrolyte imbalance and cough relief [1-2]. The treatment lasted for two weeks.

2.2.2. Study group

The study group was treated with Danshen polyphenols combined with doxofylline on top of conventional treatment. 200 mg of Danshen polyphenols was dissolved in 250 mL of 0.9% sodium chloride, and the solution was injected intravenously once a day. Meanwhile, doxofylline was administered through intravenous drip once a day (200 mg doxofylline dissolved in 250 ml of 5% dextrose) for two weeks. At the same time, patients are told to drink more water and quit smoking and drinking during the medication period.

2.3. Observation indicators

The maximum ventilation and left ventricular ejection fraction of patients in the study and the reference groups were compared before and after treatment. Besides, the efficacy of both treatments was also compared. Very effective – elimination of significant improvement in symptoms; effective – symptom relief; ineffective – no improvement in the symptoms. The formula for calculating the total efficacy is as follows:

Total effective rate = (Very effective + Effective)/Total number of cases × 100%

2.4. Statistical analysis

SPSS 22.0 was used to analyze the data. The measurement data were expressed in mean ± standard deviation and compared using a *t*-test; the count data was expressed as *n*/% and compared using a χ^2 test; $P < 0.05$ indicated statistical significance.

3. Results

3.1. Maximum ventilation and left ventricular ejection fraction

The maximum ventilation and left ventricular ejection fraction of patients in the study group were significantly higher than those of the reference group after treatment ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of maximum ventilation and left ventricular ejection fraction before and after treatment (mean ± standard deviation)

Group	Before treatment		After treatment	
	Maximum ventilation (L/min)	Left ventricular ejection fraction (%)	Maximum ventilation (L/min)	Left ventricular ejection fraction (%)
Study group (38 cases)	67.43 ± 3.62	48.12 ± 3.45	73.26 ± 4.83	56.14 ± 1.98
Reference group (38 cases)	66.67 ± 3.51	47.65 ± 3.32	70.42 ± 4.23	52.36 ± 1.85
t	0.929	0.605	2.727	8.599
P	0.356	0.547	0.008	0.000

3.2. Treatment efficacy

The total efficacy of the treatment received in the study group was 94.74%, which was significantly higher than that of the reference group ($P = 0.042$), as shown in **Table 3**.

Table 3. Comparison of the efficacy of the two treatments (*n*/%)

Group	Very effective	Effective	Ineffective	Overall efficacy
Study group (38 cases)	19 (50.00)	17 (44.74)	2 (5.26)	36 (94.74)
Reference group (38 cases)	10 (26.32)	20 (52.63)	8 (21.05)	30 (78.95)
χ^2				4.146
P				0.042

4. Discussion

When patients with chronic pulmonary heart disease in the compensated stage enter the decompensated stage, respiratory or heart failure will occur, which will not only severely impact the patient's health but may also be life-threatening [3]. Therefore, patients should seek timely medical treatment once they experience related symptoms.

Danshen polyphenols have a diastolic effect on the patient's vascular smooth muscle, and it can also dilate the patient's small bronchial arteries, reduce the cardiac load, and increase the concentration of blood oxygen [4-7]. Doxofylline is a bronchodilator, which can relax the patients' bronchial smooth muscle, thus improving lung ventilation. Combined use of these two drugs can effectively enhance the symptom relief of chronic pulmonary heart disease in the compensated stage [8-10].

In this study, patients in the study group received treatment with Danshen polyphenols combined with doxofylline. Results showed that the maximal ventilation reached 73.26 ± 4.83 L/min and the left ventricular ejection fraction was 56.14 ± 1.98%, with a total efficacy of 94.74%. These results were notably better compared to the reference group, and the difference between the two groups was statistically significant ($P < 0.05$).

The application of Danshen polyphenols combined with doxofylline in treating patients with chronic pulmonary heart disease in the compensatory stage led to significant improvements in maximal ventilation and

left ventricular ejection fraction, demonstrating high treatment efficacy

5. Conclusion

Patients with chronic pulmonary heart disease in the compensated stage can be treated with Danshen polyphenols combined with doxofylline to improve cardiopulmonary function and prevent further progression of the disease.

Disclosure statement

The authors declare no conflict of interest.

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