Clinical effect of treatment on elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis

Xiuwu Liu[1], Chenling Tang[2]* and Huimin Xu[3]
[1]The Third Internal Medicine of East Medical District, Linyi People's Hospital, Linyi, China
[2]The Sixth Internal Medicine of East Medical District, Linyi People's Hospital, Linyi, China
[3]Infectious Disease Department of East Medical District, Linyi People's Hospital, Linyi, China

Abstract: To explore and analyze the clinical therapeutic schedule of elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis. This clinical research analysis chooses the 2000 patients suffered elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis treated in the hospital during June of 2014 and June of 2015 as the object of observation. These 2000 cases are randomly divided into experimental group and control group. The patients in the control group are treated with the common method; based on the common method, those in the experimental group are treated with the atomization inhalation treatment of compound ipratropium bromide and budesonide and have rifampicin. The clinical effects of two groups are observed and contracted. The clinical treatment, CRP and other clinical evaluation indexes of experimental group are superior to the control group ($P<0.05$). There are significant differences between two groups with the statistical significance. The atomization inhalation treatment of compound ipratropium bromide and budesonide and rifampicin are implied into the elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis that can remarkably improve the effect of clinical treatment has higher clinical promotional value.

Keywords: Chronic obstructive pulmonary disease combined with pulmonary tuberculosis, elderly patient, rifampicin, effective rate.

INTRODUCTION

Chronic obstructive pulmonary disease is a kind of pulmonary disease characterized with the inadequacy reversible airway limitation that is in progressive course. Its main clinical manifestations are cough, phlegm, and pant or breathe hard and it is a major course of death in diseases of respiratory system (Ni *et al.*, 2015; Nasser, 2015; Ragab *et al*., 2016; Liu and Liu, 2010; Muheem *et al*., 2016). In recent years, with the aging, environmental pollution and the decrease of the immune system function in China, the patients suffered elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis are increasing. Because the main clinical manifestations of tuberculosis are cough, hemoptysis, night sweat and weak that are similar to chronic obstructive pulmonary disease, it is easy to be misdiagnosed or miss-diagnosed that delaying the best opportunity to cure the disease. Therefore, in order to improve the cure rate, the thesis chooses the 2000 elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis and analyses their treatment and recovery. The details are shown in the following.

MATERIALS AND METHODS

The clinical research and analysis applies the control test and chooses the 2000 patients suffered elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis treated in the hospital as the object of observation during June of 2014 and June of 2015. These 2000 cases are randomly divided into experimental group and control group with 1000 patients respectively. In the experimental group, there are 550 male patients and 450 female patients between 52 years old and 79 years old with average age of 62.66±4.24. Their courses of disease are 1~12 years with average courses of disease of 4.52±2.18 years. In the control group, there are 550 male patients and 450 female patients between 51 years old and 79 years old with average age of 661.44±4.46. Their courses of disease are 1~11 years with average courses of disease of 4.38±2.35 years. All patients match the clinical diagnostic criteria of chronic obstructive pulmonary disease and have the indication of mechanical ventilation treatment. The specific evaluation criterion are following: (1) patient has respiratory disturbance (Refer to fig. 1); (2) arterial blood gas analysis $PaCO_2 \geq 80$mmhg, $pH \leq 7.20$ or $PaO_2 < 50$mmhg; (3) Patient has thick phlegm and is difficult to spit. In this research, all patients are received the pathogenic examination with the positive sputum smear. During the treatment, they are all in their sense without the broken hepatorenal function and do not have other diseases in heart and cerebral vessels, digestive system, nervous system, blood system and other system (Han, 2015; He *et al.*, 2011). Comparing the common material of two groups such as the number, gender, age, course of disease, there are not significant differences between them. So the statistical treatment shows $P>0.05$ and the two groups have comparability.

**Corresponding author:* e-mail: zhbai@rcees.ac.cn

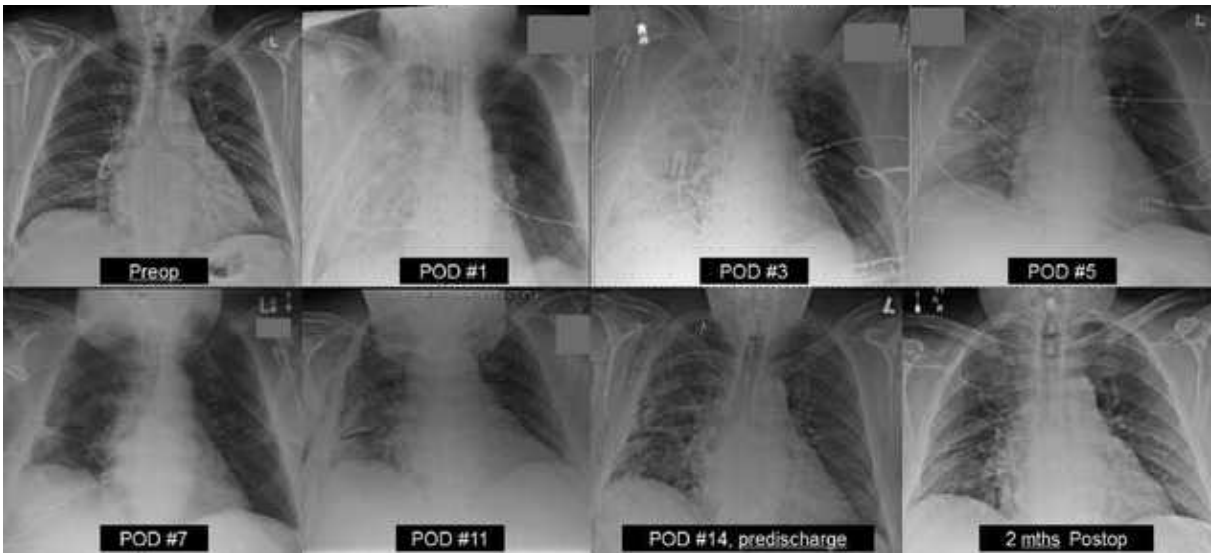

Fig. 1: The chest radiograph of patients suffered chronic obstructive pulmonary disease.

Table 1: Comparison of nursing effects between two groups (n, %)

Group	Number of case	Effective rate	CRP value after treatment	Therapeutic effect of Tuberculosis
Experimental group	1000	93.00%	9.24±5.48	90.00%
Control group	1000	73.00%	12.39±4.81	71.00%

Patients in control group are given conventional therapy that mainly includes humidifying treatment and aspiration of sputum. And the humidifying treatment should notice: (1) the adequacy of liquid and the daily liquid should be controlled between 2500~3000ml; (2) to strengthen the temperature intervene. Normally, the indoor temperature is controlled between 18~20^{o}C and indoor humidity is 60%~70%; the temperature of near end air passage should be controlled between 32~35^{o}C and humidity between 60%~70%; (3) Drip treatment is given to trachea of chronic obstructive pulmonary disease. And the liquid are 250ml normal saline, 160000 U gentamicin and 10mg chymotrypsin that are dropped intermittently with no more than 250ml a day (Fan *et al.*, 2016; Hashem *et al*., 2016; Erum *et al*., 2015); (4) atomization inhalation treatment shall use the 0.45% normal saline or sterile distilled water and the common reduce phlegm medicine are Mucosolvan, α-chymotrypsin and so on. The daily atomization inhalation treatment are three times and each time takes about 10 minutes (Liu *et al*., 2013; Wang *et al*., 2016; Ashraf and Sarfraz, 2016); (5) patients take antituberculosis drugs. This clinical research is approved by Hospital Ethics Committee.

The atomization inhalation treatment united compound ipratropium bromide and budesonide: Based on the common treatment, patients in the experimental group are given the atomization inhalation treatment united compound ipratropium bromide and budesonide. The 2.5ml compound ipratropium bromide (Imported drug: France SCS Boehringer Ingelheim Comm. V Registration number: H20120544) and 2mg budesonide (Imported drug: Australia Astra Zeneca Pty Ltd, Registration number: H20090902). The oxygen driven aerosol treatment are implied with 6L/min, and each time takes 8 hours and continues 7days (Cahill *et al.*, 2015). (2) the rifampicin treatment: in the first course of treatment: in patients take 0.3g isoniazide each time in every morning; 1.25g pyrazinamide each time one day; 0.45g rifampicin each time one day. In the second and third course of treatment: Patients take 0.3g isoniazide each time in every morning; 0.45g rifampicin each time one day.

The evaluation indexes of chronic obstructive pulmonary disease: to observe and compare effective rate of clinic treatment and CRP between two groups. The clinic research and analysis decides the effect of clinic treatment into excellent, effective and invalid. Excellent: sputum excretion of patient has been very effective, and the secreta have decreased obviously. Their cough and asthma and rale have been relieved obviously; Effective: sputum excretion of patient has been effective, and the secreta have decreased. Their cough and asthma and rale have been relieved; Invalid: has not reform to Excellent nor Effective that illnesses of patients have not became better obviously and even strengthen effective rate of clinic treatment= excellent rate + effective rate (Dobson *et al.*, 2015; Liu *et al*., 2016; Ghanemi, 2015).

The evaluation indexes of tuberculosis: two groups finish having drug after three courses of treatment and their treatment outcomes have been evaluated. This research

divides the treatment outcomes of patients into Effective and Invalid. If the bacteriological examine of sputum of patients is continuously negative; the rabat shows the obvious absorption of lesion and close cavity, the treatment will be called Effective. If the bacteriological examine of sputum of patients is positive or has not changed; the rabat shows that lesion has not absorbed and the cavity is bigger or more, the treatment will be called Invalid. In the same time, the kinds and degrees of untoward effect after having drugs are also observed and compared between two groups during the drug treatment (Ghoneum *et al.*, 2015). The rabat of patients with pulmonary tuberculosis is shown as fig. 2.

Fig. 2: Rabat of patients with pulmonary tuberculosis.

This control test uses statistical analysis software, SPSS19.0 in which all data have been analyzed and disposed. The measurement datum are shown by mean ± average ($\bar{x}$ ±s) and are compared by Chi-square; enumeration datum are expressed by natural number (n) and percent (%) and compared by t. In the statistical analysis, 0.05 is considered as the inspection standard with 95% credibility interval. When P<0.05, the comparison has significant differences that has statistic value.

RESULTS

In the experimental group, there are 860 cases with Excellent, 70 cases with Effective and 680 cases with Invalid and the effective rate of clinic treatment is 93.00%; in the control group, there are 680 cases with Excellent, 50 cases with Effective and 270 cases with Invalid and the effective rate of clinic treatment is 73.00%. The effective rate of clinic treatment of experimental group is obviously higher than the control group (P<0.05), and the differences have statistic value.

Before the treatment, the CRP of experimental group is (25.23±4.41) and one of control group is (25.32±4.37) without the obvious difference between two groups that do not have statistic value. After the treatment, the CRP of experimental group is (9.24±5.48) and one of control group is (12.39±4.81). The CRP of experimental group is obviously lower than the control group (P<0.05). There are obvious differences between two groups that have statistic value.

In the research, the experimental group has 900 cases with Effective, 100 cases with Invalid and its effective rate of treatment is 90.00%; the control group has 710 cases with Effective, 280cases with Invalid and its effective rate of treatment is 71.00%. The effective rate of treatment of the experimental group is greatly higher than one of the control group. There are obvious differences between two groups (P<0.05) that has statistic value. The therapeutic effects of two groups of patients are shown in table 1.

DISCUSSION

Chronic obstructive pulmonary disease (COPD) is a disease in respiratory system and occurs as a paradoxical reaction of inflammation toward harmful particle or harmful gas (Mellotte *et al.*, 2015). At present, bronchodilators and glucocorticoid are main drug of treatment of COPD. The inhalation therapy can reduce the untoward effect from the drug, and control the development and worsen of the disease. Based on the normal treatment, as for the COPD patients, the clinical staffs in this hospital apply the bronchodilators and the inhalation therapy of glucocorticoid choosing the compound ipratropium bromide united with budesonide.

The prevention and treatment of tuberculosis is always a focus in the global medical field. In recent years, with the serious development of increasing number of tuberculosis, searching for an effective drug to cure tuberculosis is a task which brooks no delay. In the domestic medicine development, rifapentini and rifampicin are both normal drug in the clinic treatment of tuberculosis and antibiotic in the family of rifamycin. The minimum inhibition concentration of rifapentini to mycobacterium tuberculosis is 0.12~0.25g/ml that is one time higher than one of rifampicin. In over 8 hours after having the rifapentini, patient can reach the peak of blood concentration with even 11 hours' half-life period. Compared to rifapentini, blood concentration of rifampicin is about 3 hours after taking medicine, and the half-life period is about 4 hours. Therefore, antibacterial property, effectiveness, long-acting function of rifapentini are all superior to rifampicin; and the treatment effect of rifapentini is more excellent with less intake that can effectively prevent and decrease the untoward effect of

patient after having medicine (Yung *et al.*, 2015; Albadr and Khan, 2015; Abushammala, 2015).

CONCLUSION

The atomization inhalation treatment of compound ipratropium bromide united budesonide as well as the clinic treatment of elderly chronic obstructive pulmonary disease combined with pulmonary tuberculosis using rifampicin can greatly improve the effect of clinic treatment and have high clinic promotional value.

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