

## **Clinical study of respiratory nursing in prevention of nosocomial respiratory tract infection in patients with acute left ventricle heart failure.**

**Yan Yang, Miaojuan Xia\***

Department of Cardiology, the Third Xiangya Hospital of Central South University, Changsha, Hunan, PR China

### **Abstract**

**Objective:** To study the clinical effect of respiratory nursing on the prevention of nosocomial respiratory tract infection in patients with acute left ventricle heart failure.

**Methods:** A total of 90 patients with acute left ventricle heart failure treated in our hospital from February 2015 to February 2017 were randomly selected as the objects according to the order of admission and divided into study group (n=45) as well as control group (n=45). The control group received routine care while the study group was given respiratory care besides the treatment in control group. Incidence of respiratory tract infection, quality of care and quality of life were compared between the two groups.

**Results:** Compared with the results in the control group, in the study group the incidence of respiratory tract infection was lower and the quality of care as well as the quality of life were also higher of significant difference (P<0.05).

**Conclusion:** Respiratory nursing can effectively reduce the incidence of respiratory tract infection and improve the quality of life in patients with acute left ventricle heart failure, thus worthy of clinical reference and promotion.

**Keywords:** Respiratory nursing, Acute left ventricle heart failure, Respiratory tract infection.

*Accepted on October 3, 2017*

### **Introduction**

Acute left ventricle heart failure is a common disease with such main symptoms as dyspnea and arrhythmia and it mainly results from impaired left ventricular output and myocardial impairment. Due to the serious condition, it, if not handled properly in time, will pose a huge threat to the life safety of patients [1]. According to the survey, the patients with acute left ventricle heart failure, after going through respiratory care, have much lower incidence of nosocomial respiratory tract infection and improved quality of care as well as quality of life [2]. According to the order of admission, we randomly selected 90 patients with acute left ventricle heart failure who were treated in our hospital from February 2015 to February 2017 to conduct the study with the results summarized as follows.

### **Materials and Methods**

A total of 90 patients with acute left ventricle heart failure who were treated in our hospital from February 2015 to February 2017 were selected as the objects and divided into study group (n=45) as well as control group (n=45) after being diagnosed to have acute left ventricle heart failure and being approved by the ethics committee. In the study group there were 30 males and 15 females aged 46-71 with the average age of (58.59 ± 11.68) and the course of disease was 26-72 d, (49.06 ± 12.29 d) on the average. In the control group, there were 28 males and

17 females aged 45-70 with the average age of (57.58 ± 11.01) and the course of disease was 25-70 d, (47.58 ± 11.12 d) on the average. Patients with the history of lung infection, mental illness, dysgnosia and medical diseases were excluded.

### **Methods**

The control group received routine care. The treatment was performed by following the doctor's advice with the vital signs monitored followed by close observation on the change of the disease condition and the patients were instructed to eat a bland diet. The study group was given respiratory care besides the treatment of the control group. (1) After the condition is stable, the patients were guided to move their whole body and take correct physical training according to specific circumstances. This helped to improve the patients' consciousness of self-care. The life care was required to be timely given to those with severe condition or confined to bed and the nurse helped them to turn over from time to time, gave them daily massages and backslapping to give rise to effective cough, thereby shortening the patient's bed time and reducing the rate of infection. Also, warm-keeping work was conducted. The patients were told to put on more clothes to keep warm according to the change of temperature and climate, thus avoiding catching cold and respiratory tract infection. Besides, they were informed to abstain from tobacco and drink and eat more vitamins and food rich in potassium with fewer intakes of salt and fat. The

patients were also do well skin care and oral cleaning to develop good health habits, which is the basis for prevention of respiratory tract infection [3]. (2) The patients with acute left ventricle heart failure were usually accompanied by symptoms like expectoration and cough, which if not timely treated was much likely to cause obstruction of respiratory tract and in this case, they should be helped to take semi supine position and guided to perform correct oxygen uptake followed by guiding the families of patients to master the correct method of patting back. If with ineffective sputum excretion, the patients were given corresponding measures of sputum suction and secretions of the respiratory tract were timely discharged to ensure smooth breathing of the patients [4]. For ventilator-assisted patients the ventilator should be regularly disinfected to avoid nosocomial infection. In addition, if the patients coughed and produced red-foam sputum, in addition to the treatment of secretions, nasal catheter of high flow capacity should also be given for oxygen uptake. The intra-alveolar foam was removed by way of anti-foam machine to guarantee the gaseous fluid in exchange area increased and the ethanol with the concentration of 25% was placed into the wet bottle to combine with oxygen for inhalation. If the patient was not able to inhale the alcohol well, it would be necessary to perform simple administration [5,6].

### Evaluation index

The respiratory tract infection was valued mainly from abnormal WBC (white blood cell) count and vital signs as well as cough. The quality of nursing was assessed with self-designed scale in the two methods and the evaluation contents included nursing attitude, nursing skills, nursing methods as well as nursing effect with a total score of 40, 10 for each item, the higher the score, the better the evaluation result [7,8]. The quality of life was evaluated by WHQQL-36 scale in the two groups, which included physical function, body pain, vitality, social function, emotional health, mental health and general health with a total score of 100, the higher score indicated the better quality of life in patients [9,10].

### Statistical methods

The results were analysed with statistical software SPSS21.0. The measurement data (quality of care and quality of life) were assessed by t test and the count data (condition of respiratory tract infection) were described as “n, %” and assessed by chi-square test.  $P < 0.05$  suggested there was obvious difference in the data between the two groups of statistical significance.

## Results

### Comparison of respiratory tract infection

The incidence of respiratory tract infection, abnormal WBC count, abnormal vital signs and cough in the study group were much higher than that in the control group ( $P < 0.05$ ), shown in Table 1.

**Table 1.** Comparison of respiratory tract infection in two groups.

Group	Respiratory tract infection	Abnormal WBC count	Abnormal vital signs	Cough
Study group (n=45)	2 (4.4)	4 (8.9)	5 (11.1)	5 (11.1)
Control group (n=45)	9 (20.0)	11 (24.4)	13 (28.9)	15 (33.3)
$\chi^2$	5.07	3.92	4.44	6.42
P	0.024	0.047	0.035	0.011

### Comparison of nursing quality

The score of nursing attitude, nursing skills, nursing methods and nursing effect in the study group was much higher than that in the control group of statistical significance ( $P < 0.05$ ), shown in Table 2.

**Table 2.** Comparison of clinical indicators in two groups.

Group	Nursing attitude	Nursing skills	Nursing methods	Nursing effect
Study group (n=45)	9.72 ± 1.15	9.63 ± 1.37	8.96 ± 1.24	9.27 ± 1.26
Control group (n=45)	8.14 ± 1.07	8.08 ± 1.21	7.76 ± 1.05	8.12 ± 1.14
t	6.74	5.68	4.95	4.54
P	0.015	0.027	0.023	0.019

**Table 3.** Comparison of quality of life in two groups.

Group	Study group (n=45)	Control group (n=45)	t	P
Physical function	76.17 ± 10.14	35.82 ± 10.01	18.99	0.022
Body pain	96.43 ± 12.14	75.02 ± 8.96	9.51	0.017
Vitality	78.07 ± 7.06	42.14 ± 7.32	23.70	0.031
Social function	89.57 ± 8.14	50.26 ± 7.12	24.38	0.015
Emotional health	84.25 ± 9.26	60.25 ± 7.25	13.68	0.024
Mental health	89.25 ± 10.14	61.14 ± 6.02	15.97	0.019
General health	97.25 ± 4.18	68.25 ± 4.68	31.00	0.026

### Comparison of quality of life

The quality score of physical function, body pain, vitality, social function, emotional health, mental health and general health of the study group was far higher than that of the control group of statistical significance ( $P < 0.05$ ), shown in Table 3.

## Discussion

Acute left ventricle heart failure is a syndrome of acute ischemia of myocardial caused by decreased cardiac output due to different heart diseases and its clinical signs and symptoms disease are easily confused with the infection of respiratory tract [11]. The disease often has generally heavy condition and

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moderately fast progression. It, once diagnosed, must be given timely and effective treatment, otherwise the patients may be subject to varying degrees of damage on cardiac function, then insufficient blood supply to organs and tissues and lower body resistance. Meanwhile for patients with acute left ventricle heart failure are generally elder in age with physiological and immunological functions gradually declined, the probability of infection turns out to greatly increase [12,13]. These patients have complicated condition of the disease, which is usually complicated with cataract, stroke, pulmonary heart disease, diabetes mellitus and hypertension followed by complex drug use [14]. In recent years, people have had higher requirements for the quality of care with continuous improvement of their living standard; respiratory care comes into being and is gradually applied to clinical practices with significant results [15].

The data of the study showed that the respiratory tract infection rate of the study group was much lower than that of the control group, and the quality of life as well as the quality of care were significantly higher than those of the control group of statistical significance ( $P < 0.05$ ). The main reasons include under the respiratory care strict disinfection is conducted in the wards to ensure clean sanitation and fresh air, the ward, subjected to ultraviolet disinfection one or two times a week, is also disinfected according to the specific circumstances of patients and different seasons. For example, in winter and spring the ward should be disinfected with 0.5% peracetic acid, which plays a certain role in the prevention of respiratory tract infection [16,17]. At the same time, medical equipment like humidification bottle, oxygen mask, atomizer and treatment apparatus for respiratory tract infection is thoroughly cleaned and sterilized. The pressure steam sterilization can be conducted to the parts resistant to elevated temperatures and for those not able to bear high temperature, they can be soaked in 500 mg/L chlorine disinfectant for 30 min followed by rinsing with sterile water, drying out and storing in sterile room. Humidification liquid must be replaced promptly every day with regular culture of bacteria [18,19]. The nursing staffs strengthen the care of the respiratory tract of the patients and guide them to do related activities, thus shortening their time in bed and helping their recovery. At the same time for the patients who are unable to take care of them, good life care should be offered with timely backslapping and turn over. The secretions like foam or sputum should be removing from the respiratory tract to clear the respiratory tract and reduce the rate of infection [20].

In summary, the application of respiratory care is safe and reliable in patients with acute left ventricle heart failure, which can effectively reduce the infection rate, promote the recovery of the disease and improve the quality of life as well as nursing quality, worthy of the trust and promotion from most patients.

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**\*Correspondence to**

Miaojuan Xia

Department of Cardiology

The Third Xiangya Hospital of Central South University`

PR China