Discussion on Nursing Mode of Ecmo in Treating Severe Patients

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ABSTRACT

Objective: To evaluate the nursing effect of Ecmo treatment for severe patients. Methods: 66 patients treated with extracorporeal membrane pulmonary oxygenation were included in the experimental data. From August 2018 to August 2019, the patients were divided into experimental group and reference group by random digital table method, each group was 33 cases. Routine nursing and targeted nursing were performed to compare the complications of the two groups. Results: (1) The correlation index of extracorporeal membrane pulmonary oxygenation treatment before treatment was consistent, $P>0.05$, the oxygen saturation and oxygen partial pressure of 2 h, 4 h after treatment in the experimental group were higher than those in the reference group, compared with the reference group, the carbon dioxide partial pressure of 2 h, 4 h after treatment in the experimental group was lower, showing statistical significance of data test ($PP>0.05$). (2) The incidence of infection, bleeding, coagulation, embolism and hypotension in the experimental group (12.12%) was lower than that in the reference group (45.45%), showing statistical significance ($P<0.05$). Conclusions: the specific nursing effect of extracorporeal membrane pulmonary oxygenation in severe patients can effectively improve the success rate of treatment, and the possibility of complications during treatment is low.

1. Introduction

Extracorporeal membrane pulmonary oxygenation (Extracorporeal Membrane Oxygenation, ECMO) is an important guarantee of cardiopulmonary failure cardiopulmonary bypass. It is a continuous life support therapy assistant technique. The venous blood of the patient is extracted from the body through the catheter and transported back to the patient's body through the action of artificial lung and artificial heart [1]. During the course of extracorporeal membrane oxygenation treatment, the nursing work has been required. In this study, the nursing measures of extracorporeal membrane oxygenation for severe patients were analyzed and the application effect of targeted nursing was discussed.

2. Clinical Data and Methods

2.1 Clinical Information

For the treatment of severe patients with extracorporeal membrane pulmonary oxygenation from August 2018 to August 2019, 66 cases. The grouping method is the random number table method. They were experimental group (n=33) and reference group (n=33). In the experimental group, the ratio of severe female to male was 22 to 11, up to 68 years. The age limit is 38, and age mean was (43.29±13.78) years. Mechanical ventilation time longest 5 d, mechanical ventilation time shortest 2 d, mechanical ventilation time mean (3.59±0.58) d. In the reference group, the ratio of severe female to male was 20 to 13. Age limit 68 years old, age limit 37 years old, age average

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is (43.25±13.76) years old. 6 d, maximum mechanical ventilation 2 d, minimum mechanical ventilation mean mechanical ventilation time was (3.62±0.60) d. To verify the data of age, sex and mechanical ventilation time in 2 groups of patients treated with extracorporeal membrane oxygenation, P>0.05, Comparable characteristics. Inclusion criteria: (1) All patients were severe pneumonia patients; (2) The patients could not correct hypoxemia after mechanical ventilation; (3) Patients or family members are aware of this study, Voluntary participation. Exclusion criteria: (1) malignant tumor patients; (2) Patients with mental illness [2].

2.2 Method

According to the routine nursing, the Bio line coated artery, vein intubation and extracorporeal membrane pulmonary oxygenation package were used to treat the femoral vein, centrifugal pump, oxygenation instrument and jugular vein. The flow rate of extracorporeal membrane oxygenation instrument is 2.5-4.2 L/min, the average operating time is 219 h, the oxygen concentration is adjusted to 30-40, the positive pressure at the end of respiration is 4-5 cmH, and the operating time is 219$_2$O, moisture volume adjusted to 5-6 ml/kg [3]. 4 h Prothrombin time and arterial blood gas were tested h to ensure nursing care during extracorporeal membrane pulmonary oxygenation. Experimental group to carry out targeted nursing, specific measures include: first, vital signs monitoring, extracorporeal membrane pulmonary oxygenation treatment of severe patients vital signs monitoring, Keep the heart rate at 80 beats / min, to evaluate the blood pressure level and give the patient drugs to control blood pressure. For some patients with excessive respiratory frequency, the problem of blood oxygen saturation should be prevented, and the actual situation of patients should be given drug treatment. The arterial pressure level of the patients should be dynamically monitored, especially during the adjustment of the patient's posture, and the pressure sensor system should be protected. Every 2 h the pupil of the patient was observed to prevent intracranial hemorrhage caused by heparin. Every 2 h the patient's body temperature level is monitored to prevent the patient from hypothermia. Hypothermia will cause abnormal hemodynamic indexes and affect the patient's life safety. If the patient's conditions permit, the rectal temperature is detected and maintained at 35-36 degrees. Second, airway nursing, during sputum suction operation, should be strictly in accordance with the requirements of aseptic operation, as far as possible to implement shallow attraction, to prevent injury to patients' airway mucosa. The patient's airbag pressure is checked every 12 h and maintained at cmH 25-30$_2$O,

give the patient heating, humidification management to ensure its airway mucosal humidification effect. Third, hemagglutination index monitoring, during extracorporeal membrane pulmonary oxygenation treatment, patients are more likely to develop thrombus, so during the treatment of patients will be systemic heparinization, but during the treatment is very likely to occur excessive anticoagulant problem, this should be targeted at the patient's partial coagulation time monitoring, maintain its partial coagulation time of 150-200 s, platelet maintenance at $100×10^9$L above, observe the skin, mucous membrane, arteriovenous puncture position, drainage fluid, once bleeding, subcutaneous bleeding or blood substances, the patient should be informed in time to adjust the amount of heparin [4].

2.3 Observation Indicators

Blood oxygen saturation, oxygen partial pressure and carbon dioxide partial pressure were monitored 2h, 4h severe patients before and after treatment. The complications of extracorporeal membrane pulmonary oxygenation in severe patients were recorded, including infection, bleeding, coagulation, embolism, hypotension and so on.

2.4 Statistical Analysis

The data of all 66 cases of severe patients treated with extracorporeal membrane pulmonary oxygenation were expressed as (mean ± standard deviation) in SPSS 19.0 software, including: oxygen saturation, oxygen partial pressure, carbon dioxide partial pressure index before and after treatment, t test was carried out to meet the normal distribution. The counting data is expressed in the form n(%) cases, and the data is X^2Test, including: extracorporeal membrane oxygenation treatment of severe patients with infection, bleeding, coagulation, embolism, hypotension and other complications. P<0.05, showing statistical significance of data test [5].

3. Results

Comparison of oxygen saturation, oxygen partial pressure and carbon dioxide partial pressure between the 2 h, 4 h before and after treatment of severe patients with extracorporeal membrane oxygenation P>0.05, the blood oxygen saturation and oxygen partial pressure in the experimental group were higher than those in the reference group. Compared with the reference group, the carbon dioxide partial pressure 2h ,4h the experimental group was lower after treatment (PP>0.05).

Comparison of complications such as infection, bleeding, coagulation, embolism and hypotension in severe patients treated with extracorporeal membrane oxygenation [6].

Table 1. Comparison of blood oxygen saturation, partial pressure of oxygen and partial pressure of carbon dioxide 2h, 4h before and after treatment of severe patients with extracorporeal membrane oxygenation

Group	Cases (n)	(%) blood oxygen saturation			Oxygen partial pressure (mmHg)			Carbon dioxide partial pressure (mmHg)		
		Pre-treatment	2 h after treatment	4 h after treatment	Pre-treatment	2 h after treatment	4 h after treatment	Pre-treatment	2 h after treatment	4 h after treatment
Experimental group	33	73.60±1.67	93.46±3.40	96.66±2.35	43.87±5.26	65.80±1.31	81.40±1.41	47.49±3.86	43.46±1.18	40.57±2.19
Reference groups	33	73.58±1.62	88.21±3.08	92.37±3.48	43.90±5.23	58.76±3.49	70.61±2.57	47.52±3.88	45.93±2.14	43.09±3.63
t		0.0493	6.5739	5.8688	0.0232	10.8487	21.1449	0.0314	5.8062	3.4146
P		0.9607	0.0000	0.0000	0.9815	0.0000	0.0000	0.9749	0.0000	0.0011

Table 2. Comparison of complications such as infection, bleeding, coagulation, embolism and hypotension in patients with severe n(%)] by extracorporeal membrane oxygenation

Group	Cases (n)	Infection	Bleeding	Blood clotting	Embolism	Low blood pressure	Total complications
Experimental group	33	2（6.06）	1（3.03）	0（0.00）	0（0）.00	1（3.03）	4（12.12）
Reference groups	33	4（12.12）	4（12.12）	2（6.06）	2（6.06）	3（9.09）	15（45.45）
X 2							8.9428
P							0.0027

Compared with the complications of extracorporeal membrane pulmonary oxygenation in severe patients (see Table 2), the incidence of infection, bleeding, coagulation, embolism and hypotension in the experimental group (12.12%) was lower than that in the reference group (45.45%), showing statistical significance of data test ($P<0.05$).

4. Discussion

Extracorporeal membrane pulmonary oxygenation is the current advanced treatment of cardiopulmonary diseases, which can be divided into two forms. One is to carry out oxygenation after venous blood is induced, then to the vein, and generally to treat respiratory failure. The other is to oxygenate venous blood and return to the artery. The results showed that the incidence of complications such as infection, bleeding, coagulation, embolism and hypotension in the experimental group 2h, 4h lower than that in the reference group. During the treatment of extracorporeal membrane pulmonary oxygenation, nursing staff should strictly abide by the principle of aseptic operation to prevent infection during the further period. Most of the patients treated by extracorporeal membrane pulmonary oxygenation are critical and critical. There are relatively many invasive pipelines, the immune system function of patients is seriously decreased, and the proportion of infection is high. Therefore, the requirement of clinical nursing is very high, nursing staff should strictly abide by the aseptic operation during the implementation of targeted nursing, and carry out nursing work in the aseptic state. If there is blood stains and sweat, it should be cleared to avoid the upward transmission of bacteria. In addition, for some patients who already have infection, we should apply blood culture, make clear the pathogenic bacteria of the patients, and give their targeted anti-infection treatment to ensure the safety of the patients. At the same time, the coagulation time of the patients should be monitored in nursing work, and the amount of heparin pump should be adjusted according to the actual situation of the patients. If the patients already have bleeding tendency, they should find out the cause immediately. And inform the doctor to deal with the problem of intracranial hemorrhage [7].

Combined with the above results, this study has obvious effect on the treatment of severe patients with extracorporeal membrane pulmonary oxygenation, and the blood gas related indexes of the patients have been significantly improved, and the incidence of complications during the treatment of patients has been reduced. Targeted nursing in extracorporeal membrane pulmonary oxygenation treatment has clinical value.

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