

Clinical Value of Strengthening the Management of Sensitive Indicators of Nursing Control in Hyperbaric Oxygen Therapy for Critically Ill Patients

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Abstract: Objective. Research on Clinical Value of Strengthening the Management of Sensitive Indicators of Nursing Control in Hyperbaric Oxygen Therapy for Critically Ill Patients. **Method:** 120 patients with critically ill patients who underwent hyperbaric oxygen therapy in our hospital from June 2016 to June 2018 were selected as the research objects. They were randomly divided into control group and experimental group with 60 cases in each group. The experimental group adopted the nursing mode of strengthening the management of sensitive indicators of nursing control to carry out standardized nursing management, while the control group adopted routine nursing measures. The incidence of nursing adverse events, the incidence of nosocomial infections, the risk of pipeline slippage and the satisfaction of care were compared between the two groups during hyperbaric oxygen therapy. **Results:** The incidence of adverse nursing events, nosocomial infection and risk of pipeline slippage in the experimental group were less than those in the control group. The difference was statistically significant ($P < 0.05$), the nursing satisfaction was higher, and the difference has statistical meaning ($P < 0.05$). **Conclusion:** During the period of hyperbaric oxygen therapy for critically ill patients, the management of hyperbaric oxygen nursing work was improved by strengthening the management of sensitive indicators of nursing management and control, reducing the occurrence of various adverse events, improving nursing satisfaction, providing quality assurance for hyperbaric oxygen nursing of critically ill patients, and combining the two majors of critical illness and hyperbaric oxygen.

1. Introduction

Hyperbaric oxygen is a new subject, which has been developed rapidly in recent years in China. Hyperbaric oxygen therapy has been well applied in the treatment of many diseases. The lack of monitoring means, rescue measures, shortage of medical staff and other factors have limited the application of hyperbaric oxygen in critical areas. Therefore, the nursing experience of hyperbaric oxygen therapy in critically ill patients is relatively insufficient. With the development of hyperbaric oxygen medicine, the growth of medical staff and the improvement of monitoring and rescue measures, hyperbaric oxygen plays an increasingly important role in the treatment of many critically ill patients. Because the nursing quality plays a particularly important role in the whole hyperbaric oxygen treatment, by strengthening the management of sensitive indicators of nursing management and control, providing guidance and nursing points for hyperbaric oxygen nurses, providing quality control points for nursing managers, providing assurance for the quality and safety of hyperbaric oxygen treatment for critically ill patients, improving the treatment effect, reducing the incidence of nursing adverse events, and effectively improving the satisfaction of patients and their families.

2. Data and Method

2.1 General data

120 patients with critically ill patients who underwent hyperbaric oxygen therapy in our hospital

from June 2016 to June 2018 were selected as the research objects. They were randomly divided into control group and experimental group with 60 cases in each group. The experimental group adopted the nursing mode of strengthening the management of sensitive indicators of nursing control to carry out standardized nursing management, while the control group adopted routine nursing measures.

2.2 Methods

Through the continuous exploration of clinical practice, we will develop the nursing quality control evaluation system of hyperbaric oxygen therapy for critically ill patients: Risk assessment management, training management, nursing quality management, infection control, information management, and quality continuous improvement mechanism, and establish quality control points for sensitive indicators of management and control, including risk assessment, safety verification, critical illness management area and infection quality control.

3. Special Nursing

3.1 Risk assessment of hyperbaric oxygen nursing

Design and make the risk assessment scale of hyperbaric oxygen therapy for critically ill patients, including risk identification, risk assessment and risk elimination measures. (1) The risk identification mainly includes: The patient's understanding of the relevant knowledge, the mental state of the patient, the limb movement of the patient, the psychological status of the patient, etc.; Regular risk assessment and risk management training for the nursing staff to enable the nursing staff be proficient in the application of the assessment scale; (2) Risk assessment and management strategies: Nurses use risk assessment scale to evaluate patients, and determine the risk level of patients based on the overall risk assessment score. For patients: Inform patients of the results of risk assessment, and let patients know the impact of the risks in the course of treatment on the treatment. Communicate with patients and their families, work out suitable nursing intervention measures for patients, and improve the treatment effect; For nursing staff: The nursing staff are trained in nursing knowledge related to hyperbaric oxygen therapy every week to improve the nursing staff's business ability, to ensure that the nursing staff finds the existing nursing risk factors early in the nursing process, and timely to take countermeasures to eliminate potential safety hazards; Risk control: Take positive nursing interventions based on the results of the risk assessment scale, carry out continuous quality control, and improve the quality level of risk management. (3) Notes for implementing risk assessment management: Nursing staff can grasp various information about possible risk of nursing risks, and can master the nursing risk operation of patients with hyperbaric oxygen therapy in tracheotomy, and formulate scientific and feasible nursing measures based on the actual situation of patients. After identifying and confirming high-risk nursing operations, develop detailed operational flow charts, and formulate operation purpose, risk factors, and precautions in the operation process during the nursing process; Strengthen the continuing education and training of nursing staff, improve the theoretical knowledge and practical operation ability of nursing staff, improve the responsibility of nursing staff, and pay attention to the safety of patients.

3.2 Nursing in hyperbaric oxygen chamber

In the course of treatment, patients' vital signs and general state are closely monitored, the patient's sputum drainage is observed, and the suction and other treatments are given in time. During the oxygen inhalation process, the manifestation of oxygen poisoning must be closely observed. If the patient has irritability, facial and lip muscle convulsions, cold sweating or sudden cough, shortness of breath or complaints of dizziness, nausea, weakness and other symptoms, he or she should be treated immediately. Nursing staff should adjust the position of patients according to the changes of patients' condition. Choose the right recumbent position and supply plenty of oxygen. Coma is a symptom of serious brain dysfunction, mainly because the cerebral cortex is in a highly

inhibitory state, the clinical manifestations are generally loss of consciousness, motor sensory dysfunction, any stimulation can't awake [2]. For coma patients in the premise of ensuring the patency of the respiratory tract, they need to be paid attention to avoid asphyxiation. In addition, it is noted that the patients may be due to cerebral vasodilation in the process of decompression. Increased blood flow, resulting in secondary intracranial pressure and brain edema injury. Hyperbaric oxygen treatment is the most common middle ear pressure injury, if necessary, we can appropriately prolong the time of ascending and decompression, strengthen propaganda, guide the correct method of middle ear pressure regulation, and use furosema nasal drops before entering the cabin to increase patency [3-4].

3.3 Quality management of infection control

At the end of the treatment, observe the changes of illness, measure the vital signs, and record in the hyperbaric oxygen treatment cabin record sheet, continue to keep the respiratory tract unobstructed, and escort the patient back to the ward with the doctor. For example, the tracheotomy patient should draw out the trachea sleeve balloon normal saline, inject the appropriate amount of air. Ensure smooth infusion and drainage, fixed and secure. After the condition is evaluated again, the shift work should be done, and the recovery and therapeutic effect of the patients should be recorded accurately. Fully carrying out the oxygen cabin disinfection, formulate quality and safety indicators, in strict accordance with the rules and regulations to make disinfection, isolation. Develop the following programmes for infection control management: ①to formulate the Hospital Infection Management System of Hyperbaric Oxygen Department and implement it conscientiously, and to formulate the annual work plan of hospital infection management in the department; ②Once a month to carry out specific knowledge training, quarterly assessment; ③Conduct a self-examination of the work of the department every half a month; Disinfection and isolation, hand hygiene implementation (quantitative hand hygiene assessment indicators: staff hand hygiene compliance $\geq 95\%$, hand washing correct rate 100%), medical waste management, etc. ④Oxygen cabin air bacterial culture once a month, check the daily cabin disinfection; ⑤Patients with multi-drug-resistant bacterial infection have a special disinfection and isolation process during hyperbaric oxygen therapy.

3.4 Pipeline nursing

To strengthen the nursing of all kinds of drainage tubes, such as gastric tube, closed thoracic drainage tube and indwelling catheter. First of all, the drainage of each pipeline should be kept unobstructed and effective, avoid prolapse, and properly fixed. Secondly, the color, character and quantity of the drainage need to be observed closely. If drainage is not smooth or lead to a large number of bloody liquid, it should be alert to whether there are bleeding or stress ulcers and other accidents, accompanying cabin personnel should promptly notify the doctor outside the cabin. Open all drainage tubes during decompression, such as gastric tube, catheter, etc., to prevent soft tissue compression injury caused by air expansion during decompression [5]. The treatment environment of hyperbaric oxygen is very different from that of the outside, the rescue conditions are limited, and the condition of coma patients is serious and complex. In order to achieve satisfactory therapeutic effect, it is inseparable from the close cooperation of nursing in each stage of hyperbaric oxygen therapy. There are higher requirements for the comprehensive quality of nursing staff, requiring nurses to have keen observation ability, strong sense of responsibility in nursing profession, solid professional knowledge, skilled nursing technical operation ability, rapid and accurate cooperation to complete all kinds of rescue work, keep clam in special circumstances, and the ability to deal with problems independently. In order to keep a high degree of concentration in hyperbaric oxygen therapy environment, carefully observe the changes of patients' condition and take targeted and predictive nursing measures during treatment, it is speculated that the effect of comprehensive nursing intervention model is more significant than that of conventional nursing in alleviating patients' anxiety, improving patients' disease cognition and enhancing patients' treatment and nursing compliance. It is helpful to ensure the clinical effect and reduce the adverse reactions of patients at the same time. [6]

4. Judgment criteria and results

4.1 Statistical method

All data were analyzed by SPSS21.0 statistical software package. χ^2 test is used for enumeration data; Difference of $P < 0.05$ is considered statistically significant.

4.2 Results

The incidence of nursing adverse events, the incidence of hospital infection and the risk of tube slippage in the experimental group were significantly lower than those in the control group ($P < 0.05$). As for the specific data, please refer to Table 1.

Table 1 Comparison of the Basic Information of the Two Groups of Patients

Group	Sex ratio (male / female)	Adverse event incidence rate (%)	Incidence of hospital infection (%)	Occurrence rate of tube slippage (%)
Control group	31/29	8(0.13)	6(0.1)	10(0.16)
Experimental group	30/30	4(0.06)	2(0.03)	4(0.06)
P value	$p > 0.05$.	$p < 0.05$.	$p < 0.05$.	$p < 0.05$.

Nursing satisfaction was investigated in the form of questionnaire, including satisfaction, basic satisfaction and dissatisfaction. Satisfaction = (satisfaction + basic satisfaction +) / total number of cases $\times 100\%$. Compared with the control group, the total effective rate of the experimental group was higher, $p < 0.05$, there was a significant statistical difference, the specific data are shown in Table 2.

Table 2 Survey of satisfaction of patients and their families in two groups

Group	Numbers of cases (case)	Satisfaction (case)	Basically satisfied (case)	Dissatisfaction (case)	Satisfaction (%)	
Control group	60	46	6	8	87	
Experimental group	60	54	5	1	98	

Notes: compare with the control group, $p < 0.05$

5. Discussion

Hyperbaric oxygen is a special and effective method of treatment. It is a pure oxygen treatment with equal pressure of respiration and environment in more than one atmospheric pressure environment, and its clinical application is becoming more and more common. It is very important to clean before entering, in and out of the cabin, which is to ensure effective oxygen inhalation, effective treatment, effective prevention of complications and hidden dangers of accidents. Through the above research, it is found that strengthening the management of sensitive indexes of nursing control and control during hyperbaric oxygen therapy for critically ill patients is obviously superior to traditional routine nursing. With many years of practical experience and nursing management summary, this paper explores a set of systematic nursing management system and nursing sensitive indexes of hyperbaric oxygen therapy for critically ill patients, which is intended to be applied to clinical nursing research. To explore the accuracy and feasibility of nursing sensitive indicators, according to the large sample size of critically ill patients in our department, the accurate nursing of critically ill professional nursing staff, to explore and study the systematic nursing quality evaluation system and sensitive control indicators. Aiming at the nursing quality control system of critically ill patients in the field of hyperbaric oxygen nursing in China, this paper provides operational control indexes for the nursing quality control system of critically ill patients in the field of hyperbaric oxygen nursing, and provides systematic nursing quality control for hyperbaric

oxygen nursing staff. It contributes to the development of hyperbaric oxygen and critically ill patients in the field of hyperbaric oxygen and critical care. From the aspect of nursing management, we should perfect the nursing connotation of hyperbaric oxygen therapy, strengthen the accurate nursing work, broaden the service skills and service consciousness of hyperbaric oxygen nursing managers, and really benefit the patients.

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