



Cause Analysis and Countermeasures of the Problems of Oxygen Therapy in Nursing Clinical Application

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Abstract: Oxygenic therapy mean the medical efforts to improve the arterial partial pressure of oxygen (PaO₂) and arterial oxygen saturation (SaO₂) in the alveoli of patients by inhaling oxygen concentration higher than that in the air, so as to increase oxygen content in arterial blood (CaO₂) and correct the hypoxia caused by various reasons, and thus promoting the metabolism of tissues. Besides, it is a therapeutic method to maintain the body's vital activity, which is widely used in clinical work. This paper mainly aims at the application of oxygen inhalation therapy in clinical work, and finds out the cause analysis and countermeasures of the problems of oxygen therapy in nursing clinic.

Keywords: oxygen therapy, nursing progress, cause analysis

1. Clinical application of oxygen therapy

Oxygenic therapy is to improve the arterial partial pressure of oxygen (PaO₂) and arterial oxygen saturation (SaO₂) in the alveoli of patients by inhaling oxygen concentration higher than that in the air, so as to increase oxygen content in arterial blood (CaO₂), correct the hypoxia caused by various reasons, and promote the metabolism of tissues. It is a treatment method to maintain the body's life activities and it is simple to conduct oxygen inhalation, which has a wide range of applications in contemporary medicine. Causes of dyspnea lie in numerous factors, such as asthma, bronchi, emphysema, atelectasis, heart failure, barbiturate poisoning, carbon monoxide poisoning, etc. For patients with lung capacity reduction, cardiopulmonary insufficiency, dyspnea caused by various reasons, coma and other symptoms, it has a greater role in promoting respiratory recovery. In patients with symptoms of breathing oxygen concentration has a high need, such as respiratory system diseases, which affect the lung capacity, cardiac insufficiency, make the pulmonary congestion and cause breathing difficulties, all kinds of poisoning caused by breathing difficulties, and it makes the oxygen fails to be organized by capillary infiltration and produces oxygen, coma patients such as cerebrovascular accident or traumatic brain injury patients, some patients after surgery, massive hemorrhage shock patient. The abnormal fetal heart sound and so on have more accurate symptomatic.

2. Oxygen therapy

(1) Material preparation: Oxygen device — cover, oxygen tube, small medicine cup filled with a small amount of warm water, gauze, preparation cotton swabs, oxygen recording sheet, pen, hand sanitizer, treatment card, scissors, curved plate, flashlight.

(2) Nurse preparation: To be neat and energetic.

The operator should wear neatly and bring the equipment to the bedside of the patient.

(1) Assess the environment.

(2) Greet the patient, and introduce yourself, dictate (check the doctor's advice), verify the patient's identity, explain the purpose and method of oxygen inhalation to the patient, make the patient cooperate, and ask for second defecation.

(3) Assess the patient's state of consciousness, hypoxia, and nasal cavity.

(4) Wash hands properly and wear a mask.

(5) Assist the patient to take comfortable position, supine, side, or half decubitus position.

(6) Check the patient's nasal cavity for abnormalities, evaluate whether it is unobpatency, and clean the patient's nasal cavity with cotton swabs dipped in water.

(7) After connecting the oxygen device with the central oxygen supply device, check whether the connection is stable, check whether there is oxygen, and close the flow meter.

(8) Check the validity of the nasal catheter, the outer packing, connecting nasal catheter; according to the doctor's

advice, adjust oxygen flow rate, and check for patency of nasal cannula.

- (9) Check and then gently insert the nasal catheter into the patient's nostril, check for tightness, and fix.
- (10) Assist the patient to take a comfortable position, wash hands properly, and remove the mask.
- (11) Check and inform the patient of the precautions for oxygen use.
- (12) Observe the changes of the disease and the effect of oxygen.
- (13) Record the time, flow rate and signature of oxygen used.
- (14) Organize things and carry out the terminal disposal.
- (15) When oxygen is stopped: Greet the patient, introduce yourself, check the doctor's advice, verify the patient's identity, communicate with the patient and get cooperation.
- (16) Assess the patient's condition and the effect of oxygen.
- (17) Wash hands regularly, wear masks, and assist patients to take comfortable positions.
- (18) Check and remove the oxygen catheter, turn off the flow meter switch, wipe the face, remove the oxygen device, separate the nasal catheter from the oxygen humidification bottle, and dispose of the items by category.
- (19) Put the patient in a comfortable lying position and make the bed unit.
- (20) Wash your hands properly, take off your mask, and check.
- (21) Record the time when you stop taking oxygen and organize your supplies.

3. Notes for oxygen therapy

- (1) Before using oxygen, check whether oxygen device is leaky and unobstructed.
- (2) In the actual operation process, the operation process should be strictly implemented, oxygen safety should be paid attention to, and four prevention measures should be done: shock proof, fire proof, oil proof and heat proof.
- (3) Before using oxygen or adjusting oxygen flow, the aerobic flow should be adjusted and then connected to the patient's nasal cavity. When oxygen is stopped, the catheter should be pulled out first, and then the oxygen switch should be turned off, so as to avoid a large amount of oxygen suddenly burst into the respiratory tract and damage the respiratory mucosa and lung tissues.
- (4) In the process of using oxygen, it is often observed whether the anoxic condition is improved, whether the oxygen device leaks, and whether it is unobstructed. If oxygen is one of the traditional oxygen, oxygen can also be given attention while oxygen tanks cannot be used, on the pressure gauge pointer down to 5 kg/cm², in order to prevent the dust into the barrel, prevent gas explode, it should be attached with a sign of "full" or "empty" for unused or exhausted oxygen tanks, in order to timely transfer oxygen tanks.

4. Possible complications of oxygen therapy

4.1 Ineffective oxygen inhalation

Clinical manifestations of patients feel inadequate air, laborious breathing, chest tightness, irritability, can not recumbent. Physical examination: tachypnea, chest tightness, no improvement in symptoms of hypoxia, decreased oxygen partial pressure, cyanosis of lips and fingernail beds, agitation of the nose, etc. Respiration rate, rhythm and depth all changed. To eliminate this kind of situation, to check the oxygen device, oxygen pressure, pipeline connection is leaking. Before taking oxygen, check the patency of the oxygen tube. Put the oxygen tube into cold boiled water to understand the overflow of bubbles. Oxygen tube should be fixed properly to avoid falling off and displacement. In the process of oxygen inhalation, always check whether the oxygen inhalation catheter is blocked, especially for the use of nasal catheter oxygen inhalation, nasal catheter is easy to be blocked by secretions. To remove respiratory secretions in time, keep the airway smooth, for patients with more secretions, appropriate supine position, head biased to one side.

4.2 Oxygen poisoning

Characterized by pulmonary parenchymal changes, such as alveolar wall thickening and bleeding. Under normal circumstances, after continuous absorption of pure oxygen for 6 hours, the patient can have a burning sensation behind the sternum, cough, nausea, vomiting, irritability, pale face, chest pain. After 24 hours of oxygen inhalation, lung capacity can be reduced. Progressive dyspnea may occur after 1 ~ 4 days of pure oxygen inhalation. Sometimes visual or mental disorders may occur. For the prevention of such symptoms, we should strictly grasp the indications of oxygen inhalation and oxygen withdrawal. Choose the proper oxygen supply. Control oxygen concentration with general oxygen concentration failing to exceed 45%. According to the situation of oxygen therapy, we should conduct timely adjustment of oxygen flow to avoid long-term high-flow oxygen inhalation with analysis on frequent blood gas and dynamic observation

of the therapeutic effect of oxygen therapy.

4.3 Pulmonary Atelectasis

After inhalation of high concentrations of oxygen, the oxygen in the alveolar area is rapidly absorbed by pulmonary circulation blood, causing aspiration atelectasis, which is manifested as restlessness, rapid respiration rate, rising blood pressure, and then dyspnea cyanosis. Preventive measures are made to encourage patients to take deep breaths, cough and change prone position frequently to prevent secretion obstruction.

4.4 Abdominal distension

The clinical manifestations are aggravated hypoxia. The patient is agitated with obvious abdominal distension, abdominal wall tension is large, shortness of breath is shallow, chest breathing is weakened, lips are blue and purple, pulse is fine, presenting acute manifestations, life-threatening cases. Prevention and treatment measures can be taken to correctly master the use of nasal catheter, the use of nasal plug oxygen inhalation, nasal vestibule or mask oxygen inhalation can effectively avoid the occurrence of this complication. If the occurrence of acute abdominal distension, timely gastrointestinal decompression and anal exhaust.

4.5 Carbon dioxide anesthesia

Clinical manifestations include vague consciousness, lethargy, flushed face, shallow, slow and weak breathing, moist skin, unstable mood, and abnormal behavior. Hypoxia and carbon dioxide retention coexist, should be low flow, low concentration of continuous oxygen is appropriate. For patients with chronic respiratory failure, limited oxygen was used, and low flow continuous nasal catheter or nasal plug was commonly used for oxygen inhalation. The oxygen concentration was 24%-33%, and the oxygen flow rate was controlled at 1-3L/min. Once the condition deteriorates after the occurrence of high concentration oxygen inhalation, oxygen cannot be stopped immediately. Oxygen should be continued after adjusting the oxygen flow rate to 1~2L/min, and respiratory injections should be applied at the same time. Strengthen respiratory tract management, keep respiratory tract unobstructed, promote carbon dioxide emission. Artificial airway should be established for artificial ventilation if the above treatment is ineffective.

4.6 Dry respiratory secretions

Oxygen is a kind of dry gas inhalation can lead to respiratory mucosa, dry and not easy to cough, and damage cilia movement, so before oxygen inhalation must be moistened and then inhaled, in order to reduce the stimulation, and regular inhalation of atomization.

4.7 Fibrous tissue hyperplasia after lens

It is only seen in neonates. Oxygen concentration and duration should be controlled in neonates because of retinal fibrosis resulting from constriction of retinal blood vessels and irreversible blindness.

4.8 Respiratory depression

In type II respiratory failure (decreased arterial pressure of oxygen and increased partial pressure of carbon dioxide), due to the carbon dioxide partial pressure at a high level for a long time, the sensitivity of the respiratory center lost on carbon dioxide, rely mainly on the regulation of breathing oxygen chemoreceptor stimulus to keep foreign weeks, inhaling high concentrations of oxygen, remove the stimulating effect of the lack of oxygen to breathe, aggravate respiratory central inhibition. Patients with type II respiratory failure should be given continuous oxygen at low concentration and low flow.

5. Oxygen therapy in nursing clinical problems and causes analysis

(1) Nurse fails to follow oxygen orders in a timely manner: There is a continuous low flow of oxygen on the doctor's order and the patient is not on oxygen and there is no oxygen device at the bedside.

Cause analysis: ① The clinical nursing work is busy, and the medical advice is not carefully checked, resulting in the omission of medical advice; ② Nurses lack subjective initiative and do not take the initiative to assess the patient's condition.

(2) The inhaled oxygen flow of the patient is different from the doctor's order: the doctor's order is to inhale oxygen at a continuous low flow rate of 1-3L/min, and the patient's bedside oxygen flow meter shows that it is greater than 3L/min.

Reason analysis: Nurse: ① Failed to provide health guidance for patients after oxygen inhalation operation.

Patients: ① The pipeline is bent and discounted; ② In the traditional concept, patients and their families believe that the nasal cannula of the oxygen inhalation tube should feel like a blow, and adjust the oxygen flow by themselves.

(3) The patient is not wearing the nasal oxygen tube correctly, or it is arbitrarily removed and placed aside.

Reason analysis: Nurse: ① Health education for patients after oxygen inhalation is not in place; ② Careless inspection of the ward and failure to detect the situation in time.

Patient: ① The patient thinks that the oxygen inhalation therapy has no effect; ② He believes that the oxygen inhalation tube affects the activity and is removed by itself, and it is not worn in time after getting out of bed.

(4) The patient does not know the precautions after oxygen inhalation:

Reason analysis: Nurses: ① Lack of theoretical knowledge; ② Lack of health education for patients.

Patients: ① The patient does not cooperate; ② The patient is old or has a low education level, and has not learned the precautions for oxygen inhalation in detail.

(5) Insufficient understanding of oxygen inhalation therapy: Knowing only the effects of oxygen inhalation, but not the complications of oxygen inhalation

Cause analysis: Nurse: Lack of theoretical knowledge

Patient: Limited knowledge acceptance

6. Measures to solve the problems of oxygen therapy in nursing clinical work

(1) Objectively and accurately assess the patient's condition, execute the doctor's advice in time and strictly check it, inhale oxygen for the patient strictly in accordance with the oxygen inhalation operation process, and standardize nursing records.

(2) Strengthen ward visits, closely monitor vital signs, observe whether oxygen nasal catheter is unobstructed, carefully check oxygen inhalation doctor's orders, ask patients not to adjust oxygen flow at will, inform patients of the effects and effects of continuous low-flow oxygen inhalation, and the harm of continuous high-flow oxygen inhalation.

(3) Carry out health education, guide patients to wear nasal oxygen tube correctly, inform patients of the impact of oxygen inhalation on the treatment effect of the disease, and the adverse consequences of not using oxygen.

(4) Carefully learn the safe oxygen use system, operate in strict accordance with the operating standards, hang up the safe oxygen use logo, and do a good job in the "four prevention" health education.

(5) Master the theoretical knowledge of oxygen inhalation, and conduct regular assessment with careful pat.

7. Discussion

Oxygen therapy is a treatment method that can correct hypoxia caused by various reasons, promote tissue metabolism, and maintain life activities of the body. It is easy to operate and has a relatively wide application in contemporary medicine. Through the application of oxygen inhalation in clinical work, it is found that oxygen inhalation is not just an action of oxygen inhalation. There are many problems and precautions in nursing clinical work that we need to strictly grasp in order to better use oxygen therapy and better safeguard the health of patients.

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