

Clinical Diagnosis and Treatment in Emergency Medical Department to Rescue Unconscious Patients

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Abstract: Coma is a common and critical illness in emergency medicine. It is mainly caused by abnormal metabolism of the cerebral cortex and brainstem network structure that maintains normal conditions, causing the patient to lose consciousness, consciousness, etc. If the patient fails to receive timely and effective diagnosis and treatment after the onset of disease, it will threaten the lives of patients. However, because the patient was in a coma or impaired consciousness after admission, he was unable to describe his condition, medical history, etc., which increased the difficulty of clinical diagnosis. Coma is a common emergency and critical illness with a high fatality rate in the emergency department. It is more common in acute cardiovascular and cerebrovascular diseases, poisoning, and trauma. Because the patient presented with a severe disorder of consciousness, unable to provide relevant medical history and cooperate with diagnosis and treatment, and the etiology involved multi-disciplinary and multi-professional knowledge, it brought great difficulties to diagnosis, rescue and treatment. Therefore, how to quickly determine the cause of the disease in a short time and implement the correct rescue measures in the first time has become a great challenge for emergency medical staff. Medical research has shown that the diagnosis and treatment of coma patients must clarify the cause of the patient, understand the factors that cause the coma, and formulate targeted diagnosis and treatment measures. Therefore, clinically, it is necessary to strengthen the rapid diagnosis and timely examination of patients with coma in emergency medicine, understand the cause of the patient's coma, and adopt effective treatment methods, so as to stabilize the patient's vital signs and avoid further development of the disease.

Keywords: Clinical Diagnosis; Emergency Medical Department; Unconscious Patients

1. Introduction

Consciousness is an important vital sign and an important indicator that reflects the functional state of the brain. Coma is a state of consciousness that excludes concussion, transient fainting, and is a state of consciousness between awakening and shock (Ommaya, A. K., & Gennarelli, T. A., 1974). It is a pathological manifestation in which cerebral cortex function is inhibited due to diseases and other reasons. The duration of coma is often longer, and some of them may even be accompanied by brain death and enter the state of plant survival. The risk of death from coma is higher, and it is more common in patients with cardiovascular and cerebrovascular accidents. It has been reported that about one-third of critically ill patients were admitted to the hospital with coma, and about one-fifth of those admitted to coma died or did not fully recover their consciousness when discharged. , Diagnosis, treatment and rescue of coma are difficult, so it is necessary to sum up experience.

Selecting a hospital from February to December 2016, the emergency department of the hospital can rescue 50 patients with coma, including 25 males and 25 females, aged 17-83 years old, with an average of (58.1 ± 14.5) years old. Disease types: 11 cases of cerebral hemorrhage, 15 cases of hypoglycemia, 10 cases of cerebral infarction, 6 cases of moderate ethanol, 4 cases of pulmonary encephalopathy, 2 cases of cardiogenic disease, 2 cases of diabetic ketoacidosis. The time from onset to treatment was 30 min-16 h, with an average of (3.4 ± 1.4) h. Among them, 21 cases were in-hospital coma and 29 cases were out-of-hospital coma. The severity of coma: 4 cases were mild, 20 cases were moderate, and 26 cases were severe.

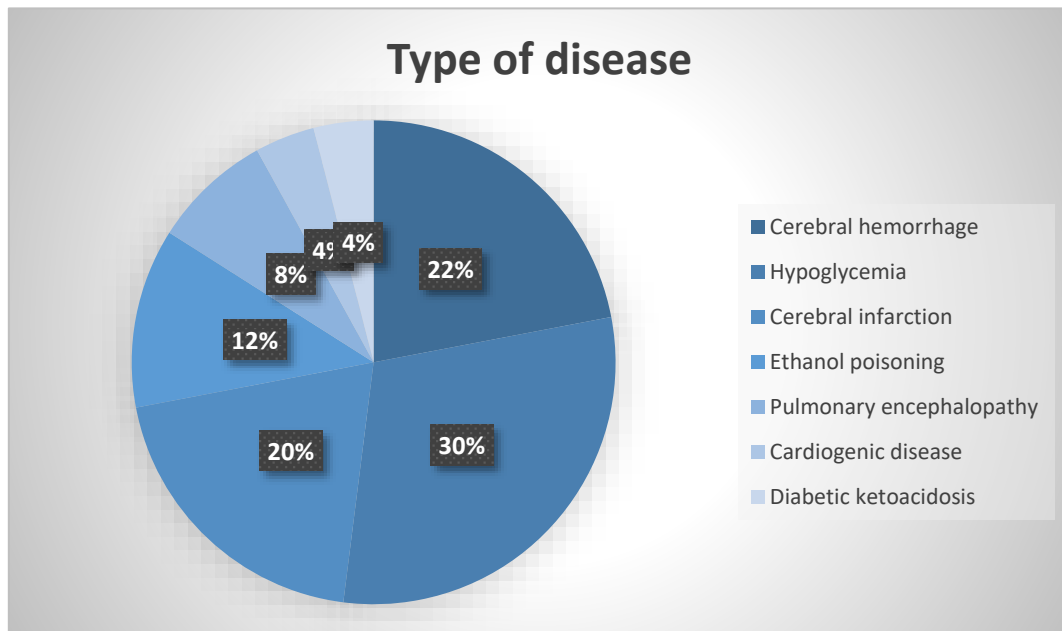


Figure 1: Types of diseases

2. Diagnosis method

Due to the relatively large number of causes of coma patients in emergency medicine, their condition changes relatively quickly after the onset of illness (Schuckit, M. A., 2006). In order to help patients diagnose as soon as possible, after admission, carefully ask the patient's basic information, including: past history, current medical history, and disease status, combined with the patient Perform physical examinations for clinical manifestations, such as electrocardiogram, blood routine, urine routine, etc., for those who are difficult to diagnose the cause, necessary auxiliary examinations can be given to get a clearer understanding of the patient's vital signs and complete the judgment of the coma level (Holcomb, J. B., 2005). At the same time, the physician should also carefully ask the patient's family members about the drug history of the patient. For patients with cerebrovascular disease, CT scan of the head should be performed immediately; for patients with a history of diabetes, heart disease, and hypertension, blood glucose, electrocardiogram, ultrasound, myocardial enzymes, and liver and kidney function tests should be strengthened (Ballestri, S., 2014); for coma caused by poisoning, they should be taken immediately Arrange gastric lavage for patients. Emergency medical coma patients should give full play to their divergent thinking when diagnosing, be good at grasping the wholeness and dynamics of the disease, and be good at using medical professional theoretical knowledge for dialectical diagnosis based on the doctor's own clinical work experience. In the diagnosis of coma patients, one should be good at using one's own professional theoretical knowledge, accumulate clinical experience, and improve the clinical diagnosis rate.

Early treatment is based on the principle of saving the lives of patients, and priority is given to emergency situations that seriously threaten the lives of patients. Give patients routine ECG monitoring and establish venous access (Stuart, R. K., Shikora, S. A., 1990). Clear the patient's respiratory secretions in time to keep the patient's breathing unobstructed and inhale oxygen to maintain blood oxygen saturation. Combine blood pressure changes, urine output, peripheral circulation, etc. to determine whether the patient is in shock. If necessary, measures such as improving circulation, replenishing volume, and tissue perfusion are given immediately to maintain the stability of the patient's overall circulation. Observe that if the patient has shallow breathing or ventilator paralysis, intubation and ventilation are required immediately to ensure that the patient's breathing cycle is stable.

After admission, if the patient is still in a coma, immediately check vital signs and ECG monitoring, clear respiratory secretions in time, and implement oxygen therapy if necessary to maintain the body's oxygen saturation, and carry out intensive care in the shortest time. Flow oxygen, establish venous channels, and perform corresponding laboratory examinations according to changes in vital signs (Chen, Z. M., 2020). In the rescue process, the patient was first implemented on the basis of intravenous injection of naloxone, and gastric lavage, anti-infection, and reduction of intracranial pressure were

carried out according to the medical history, clinical response and laboratory test results of the comatose patient. Ensure that the patient's breathing is normal. If shallow or slow breathing occurs, mechanical ventilation can be implemented, cardiopulmonary resuscitation for patients with cardiac arrest, and targeted rescue measures should be implemented. After the body's breathing is stable, follow-up treatment can be implemented.

Patients with hypoglycemic coma often have recent manifestations of hypoglycemia, and more often are superficial coma (Vriesendorp, T. M., DeVries, 2006). Some patients may have tachycardia, central nervous system dysfunction caused by focal brain lesions, and a small number of patients may even have unilateral limb hemiplegia, and blood pressure often. The performance is too high or too low. Third, laboratory tests are needed, mainly for blood biochemistry, blood sugar, and specific indicators. If alcoholism is suspected, a blood alcohol concentration test is required. For carbon monoxide poisoning, blood gas analysis is required. For hypoglycemic coma, blood glucose is required. According to analysis, in general, blood sugar is below 3.0 mmol/L, glycated hemoglobin (Hb A1c) can be high or low, but there are often serum electrolyte disturbances, which are manifested as increased or low blood potassium. Finally, it is necessary to perform electrocardiogram monitoring, if necessary, perform electroencephalogram detection, dynamic and blood analysis, check the condition, and also be used for auxiliary diagnosis and differential diagnosis (Adeli, H., Ghosh-Dastidar, S., & Dadmehr, N., 2005).

Do a good job in basic rescue work. ① Connect the monitoring equipment, carry out physical sign detection, and send to the laboratory for monitoring of pancreatic amylase, myocardial enzymes, electrolytes, liver function, kidney function, urine routine, blood routine, blood sugar and other indicators. It is not only used for diagnosis, but also assists in analyzing the severity of the disease. Evaluate the rescue effect, and guide the treatment; ② Establish intravenous access, refill fluids and medication at any time, and choose a micro-injection pump for infusion of vasoactive drugs; ③ Maintain the general respiratory tract, remove foreign bodies in the respiratory tract, clean up the secretions of the nose and mouth, For vomit, prepare rescue equipment such as tracheal intubation, aspirator, and direct mechanical ventilation if necessary.

Arousal treatment. Intravenous infusion of naloxone is the main method, and can also be combined with naloxone 0.4-0.8 mg + normal saline 20 ml, intravenous bolus injection, and then intravenous infusion of naloxone 1.2 mg + normal saline 250 ml intravenous infusion, Micropump injection, if necessary, combined with sedative drugs such as Valium.

Symptomatic treatment:

(1) Acute poisoning: First, carry out gastric lavage and catharsis treatment to reduce the patient's absorption of poisons. According to the toxicological identification report, give corresponding antidote, such as organophosphorus pesticide poisoning can be given pralidoxime, opioid poisoning can be given naloxone, mercury poisoning can be given sodium dimercaptopropionate, ethanol poisoning can be given naloxone, high glucose and Supplement vitamins in time. ① For alcoholism, perform gastric lavage treatment until clear water is inhaled. If the patient's consciousness recovers, induce vomiting, Shudan and metoclopramide will treat vomiting, cimetidine will prevent reflux, combined with vitamin B6 and vitamin C to prevent Cerebral edema, use 20% mannitol to prevent the increase in intracranial pressure, fructose to protect the gastric mucosa, diammonium glycyrrhizinate to protect the liver, indwelling urinary catheter, severe alcoholism, intermittent oxygen inhalation; ② carbon monoxide poisoning, give mannitol dehydration, drug diuresis, ATP, Vitamin C prevents brain edema, ATP prevents cell damage, combined with energy mixture, and then transferred to hyperbaric oxygen chamber for hyperbaric oxygen therapy. The number of oxygen therapy is arranged according to the severity; ③ For food poisoning, gastric lavage is the main rescue method, sitting or sitting Semi-sitting position, or left lying position, gastric lavage solution 25°C~38°C, insert the gastric tube 45~55 cm through the mouth, lavage the stomach with a gastric lavage machine, and perform brain protection at the same time. After the patient's consciousness is stabilized, he will be sent to the ICU guardianship;

(2) Intracranial hemorrhage: Give dehydration to lower intracranial pressure, lower blood pressure, and improve cerebral circulation drug treatment. If necessary, transfer to brain surgery for emergency operation.

(3) Hypoglycemia: Patients with light coma can be given intravenous injection of 50% glucose solution 60-100 ml, multiple injections, refractory recurrence, combined with glucocorticoid therapy, hydrocortisone is the first choice, combined with oxygen inhalation, At the same time combined with brain protection therapy;

(4) Ketoacidosis: A small dose of insulin needs to be injected intravenously first to correct dehydration.

(5) Cardiogenic coma, which is more common in acute heart failure, needs to monitor central venous pressure, adjust infusion speed, gradually restore restored blood volume, correct fluid imbalance, maintain CVP at 6~12 cm H₂O, and control input volume. Rehydration adheres to the principle of keeping within limits and controlling electrolytes. It can also be supplemented with total urine output. For patients with oliguria, cardiotonic drugs such as furosemide, spironolactone, and benazepril are given preventively, combined with mechanical ventilation support treatment

(6) Liver disease: Weak acetic acid retention enema was performed, and blood ammonia-lowering drugs were given at the same time.

(7) Pulmonary disease: Give anti-infective drugs to correct acid-base imbalance, and give a ventilator to assist breathing when necessary.

3. Observation index

(1) Clinical symptoms and manifestations. Observe the clinical manifestations and composition ratio of the patients after admission, including symptoms such as dizziness, nausea, fever, and hazy.

(2) The cause. Observe the causes of the patient's coma, including: acute poisoning, intracranial hemorrhage, hypoglycemia, myocardial infarction, ketoacidosis, gastrointestinal diseases, etc.

(3) Quality of life. The SF-36 quality of life scale is used to evaluate patients before and after treatment, including: cognitive function, role function, emotional function, physical function, social function and total quality of life. The higher the score, the higher the patient's quality of life. .

Table 1: The treatment results

Cause	Number	Effective cure Rate of improvement	Death
Cerebral hemorrhage	11	58	0
Hypoglycemia	15	37	1
Cerebral infarction	10	36	2
Ethanol poisoning	6	40	0
Pulmonary encephalopathy	4	34	0
Cardiogenic disease	2	32	0
Diabetic ketoacidosis	2	31	0

4. Conclusion

Coma is a common disease in emergency medical patients. The patient's condition changes rapidly after the onset of the disease.(Daar, E. S., Moudgil, T., Meyer, R. D., & Ho, D. D. ,1991) It has the characteristics of high mortality and low cure rate, which affect the health of patients. Coma is induced by different factors that hinder the transmission function of the ascending activation system of the brainstem reticular structure, so that the excitement of the cerebral cortex cannot be maintained or the cerebral cortex is damaged. Coma poses a serious threat to the life safety of the patient. Therefore, regardless of the cause of the coma, medical staff need to quickly complete the early treatment of the patient before obtaining a comprehensive medical history and a series of auxiliary examination reports to prevent induction. Factors further damage the patient's brain and other organs.

At present, clinically, there are relatively many reasons that can cause patients to coma. Under the influence of different factors, patients cause stimulation of the network structure of the brainstem(Manford, M., & Andermann, F. 1998), which leads to the functional obstruction of the system, which causes obvious obstacles to the transmission of excitement in the brain. Damage to the cerebral cortex occurred. Reports in the literature show that most of the coma patients in the emergency medical department are mainly acute cardiovascular and cerebrovascular diseases and acute poisoning. Emergency medical coma patients have more clinical manifestations after admission. After admission, the clinical diagnosis of the patients should be strengthened, the cause of the patients should be understood, and accurate symptomatic treatment should be proposed based on the diagnosis results to

improve the clinical cure rate(O'malley, K. J., 2005).

For emergency medical patients, the main clinical practice should be to reduce the clinical mortality rate, and timely and effective measures should be taken to help patients with treatment, so that emergency treatment should be given priority. At the same time, the patient should be carefully asked about the patient's medical history, etiology, etc. during the rescue process, and the corresponding physical examination and necessary imaging examinations should be performed on the patient to grasp the essence of the disease. For patients with unexplained causes of the original coma, especially elderly patients, a blood glucose meter should be used to monitor the patient's blood glucose to help patients detect hypoglycemia in time. For those who are waiting for the results of the blood biochemical examination of the patient, if the treatment is improper or not timely, it will cause irreversible damage to the brain tissue. In severe cases, it will cause a long-term vegetative state and even threaten the life of the patient. Patients should be given naloxone injection immediately during treatment. This drug is a morphine receptor antagonist. After the patient is treated, the drug can effectively inhibit and antagonize the adverse effects of β -endorphin on the patient. For patients with alcohol poisoning and overdose of anesthetic drugs, the use of naloxone can effectively alleviate the symptoms of coma, thereby effectively improving the quality of life of the patients and promoting the early recovery of the patients.

The clinical experience is summarized as follows: after admission to the hospital, patients with acute poisoning and coma should be actively treated with supportive treatment, that is, breathing, circulatory support, gastric lavage, catharsis, and diuresis, etc., and specific cause treatment should be given immediately after the type of poison is determined. In severe cases, hemodialysis is required according to the type of poison and the general condition of the patient. Diabetes complications are a serious cause of coma. The clinical experience is summarized as follows: Hypoglycemia is the first reason for this kind of fascinating group. When the blood sugar is too low and the liver glycogen is depleted, it will cause the patient's brain dysfunction. If blood sugar remains too low for a long time, it will cause irreversible damage or death of brain cells(Rozance, P. J., & Hay Jr, W. W. ,2010). The key to the treatment of patients with hypoglycemia and coma is: timely detection of hypoglycemia, timely supplement of glucose, and appropriate administration of glucose-increasing drugs such as glucagon and glucocorticoids. Secondary brain diseases mainly include lung disease and liver disease. Patients with lung disease need to be given anti-infective drugs first to correct the acid-base imbalance in time, and ventilator assisted breathing if necessary; patients with liver disease need to be given a weak acid retention enema immediately, while giving intravenous infusion of drugs to lower blood ammonia.

For the diagnosis of coma, medical history, symptoms, vital signs, laboratory tests, electrocardiogram, etc. are easier to diagnose. In the study and research, I found that hypoglycemia caused cerebral herniation and was diagnosed as a cerebrovascular accident. Ignoring the analysis of the relationship between hypoglycemia and brain herniation. In fact, there are many reasons for the formation of brain herniation. Alcoholism may lead to the formation of herniation, and sufficient attention should be paid. Another example is cerebrovascular accidents after drinking, but whether excessive drinking needs to be judged by laboratory tests to find out the relationship between them. For rare diseases and diseases with unknown medical history, diagnosis is often difficult. For example, accidental drug poisoning is often unable to effectively determine the cause of the coma, which brings difficulties to the diagnosis to a certain extent. Physicians need to pay attention to data collection, mutual verification, bold guesses based on evidence, and avoid falling into inertial thinking.

For the treatment of coma, the main task should be to promote awakening and maintain the stability of breathing and circulation, which is the key to ensuring the safety of patients' lives. After the cause of the disease, symptomatic treatment, such as alcoholism, often requires detoxification treatment, and some patients even need dialysis. For awakening therapy, in addition to naloxone, it can also be combined with other drugs to promote awakening from a variety of ways. During the treatment process, we should also pay attention to organ protection to avoid organ failure.

To sum up, the morbidity factors of coma patients are more complicated. The implementation of emergency medical rescue can carry out treatment according to the patient's clinical symptoms, implement targeted treatment measures, and reduce the mortality rate. Based on the principle of rescuing the lives of unconscious patients, priority should be given to emergency situations that seriously threaten the lives of patients, correct the unstable vital signs of patients, and prevent further damage to the brain and organs by harmful factors.

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