

A Personalized Nursing Care of DSA Complicated with Contrast Media Encephalopathy

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Abstract: This article reports a case of DSA examination of the head using a contrast agent. Neurological symptoms appear at the end of the examination. After excluding other diseases, it is considered as contrast agent encephalopathy. After the symptoms appear, after active rescue, after the patient's condition is stable, the clinical symptoms of the patient are combined with the characteristic treatment of traditional Chinese medicine to do a good job of nursing work to relieve the patient's symptoms and promote their recovery. This article is based on the treatment of western medicine, combined with the characteristic therapies of traditional Chinese medicine, and provides a new way of thinking for personalized nursing of contrast encephalopathy by combining Chinese and Western medicine.

Keywords: Contrast-medium encephalopathy; Cranial DSA; Nursing

1. Introduction

Contrast-induced encephalopathy (CIE) is a rare complication that occurs after cardiac, brain, and renal angiography^[1], the incidence is only 0.06%^[2], clinical prospects, aphasia, limbs Unfavorable activities and other performance^[3]. Therefore, nursing staff should be differentiated from a variety of clinical diseases, such as ischemic or hemorrhagic stroke, metabolic encephalopathy, etc.^[4]. The author introduces an elderly male case, the diagnosis and treatment of DSA complicated with contrast-medium encephalopathy in the acute phase of cerebral infarction, and also consults related literatures, aiming to provide experience for clinical nursing.

2. Case introduction

The patient, male, 65 years old, was admitted to the hospital with "stroke, acute cerebral infarction" on July 18, 2020 due to "seizure dizziness for 2 days, aggravation with nausea and vomiting for 10 hours". On August 9th, the head DSA examination was perfected. At the end of the angiography, the patient had sudden loss of consciousness, closed teeth, limb stiffness and spasm-like convulsions, and urinary incontinence. Active symptomatic treatment was given, and the head CT was improved, considering the patient's symptoms and medical history. Contrast encephalopathy. The patient has impaired consciousness. In the afternoon, the patient has repeated seizures. Please refer to the Intensive Medicine Department for further treatment after consultation. Immediately after admission to the department, intensive care should be given, with tracheal intubation connected to ventilator assisted ventilation; emergency blood routine, coagulation six items, blood gas analysis, B-ultrasound and other related tests and inspections; blood pressure control, dehydration, intracranial pressure, anti-infection, and prevention Epilepsy, sedation and analgesia, ventilator-assisted ventilation, nutrient cranial nerves, acid suppression, maintenance of electrolyte balance and acid-base balance, nutritional support and symptomatic treatment, and actively prevent complications. Close observation of the patient's consciousness and pupil changes, dynamic review of CT, many consultations, after timely treatment and careful care, the patient's condition improved. On August 10, 2020, the blood test, kidney function, liver function, coagulation, electrolytes, blood gas analysis and head + chest CT were reviewed. The results: the blood test showed that the white blood cell count was $15.94 \times 10^9/L$, the lymphocyte percentage was 16.1%, and mononuclear The cell percentage was 16.6%, the neutrophil count was $10.55 \times 10^9/L$, the monocyte count was $2.65 \times 10^9/L$, the red blood cell count was $4.27 \times 10^{12}/L$, the

C-reactive protein was 48.8mg/L, and the hypersensitivity C-reactive protein >10.0mg/L, liver function, kidney function, myocardial enzymes and electrolytes show that γ -glutamyltransferase is 123 U/L, lactate dehydrogenase is 309 U/L, total protein is 62.9 g/L, and albumin is 37.1 g/L, Direct bilirubin is 7.2 μ mol/L, α -hydroxybutyrate dehydrogenase is 248U/L, urea is 10.46nmol/L, sodium is 136.3mmol/L, and the six items of coagulation show that the plasma fibrinogen content is determined to be 5.69 g/L, D-dimer is 2.63mg/L, fibrinogen degradation product is 8.6mg/L, and the right cerebellar hemisphere is low-density shadow. Blood gas analysis showed that PH was 7.45, PCO₂ was 39mmHg, and PO₂ was 60mmHg, suggesting type I respiratory failure. Re-examination of the head and chest CT showed multiple lacunar infarctions, and some lesions were softened. The outer basal segment of the right lower lobe of the lung bullae, the left ventricle enlarged, and bilateral pleural effusions were absorbed more than before. The other indicators and imaging examination did not significantly worsen. On the morning round of August 16, 2020, the patient was conscious, his left upper limb was weak, and the rest of the limbs were flexible, walking was acceptable, he could follow instructions to complete the action, his speech was vague, he had little communication with others, and his appetite was acceptable. The night rest is OK, and the second is basically normal. On August 18, 2020, the patient was discharged from the hospital.

3. Nursing

3.1. Emergency care

In this case, the patient had sudden loss of consciousness, closed teeth, spastic convulsions of limbs, urinary incontinence, etc., and immediately placed the patient in a depressed position with the head tilted to one side, and restrained the limbs with a restraint band to prevent extubation and accidental injury; The tracheal intubation is connected to a ventilator to assist ventilation to improve the patient's hypoxia symptoms and reduce brain cell damage; timely expectoration to prevent suffocation; ECG monitoring is performed to closely observe the patient's vital signs, including pupil size, consciousness and the skin condition of the restrained area Catheterize the patient, record the color and volume of urine; establish intravenous access, intravenous infusion of 20% mannitol to reduce intracranial pressure, micro-pump injection of vancomycin, nitroglycerin and other drugs for anti-infective tube expansion, intravenous injection of diazepam quietly relieves pain and maintains water-electrolyte acid-base balance; urgent blood routine, coagulation six items, blood gas analysis, B-ultrasound and other related tests; keep the ward quiet to relieve the fear, anxiety and other bad emotions of patients and their families.

3.2. Condition observation

Give patients special care, closely observe the patient's vital signs, including body temperature, pulse, respiration, blood pressure and blood oxygen saturation; closely observe the patient's state of consciousness; observe the skin, especially the skin and the color of the skin and mucous membranes of the compressed area and the restraint area. Whether there is bleeding, redness and swelling to prevent pressure ulcers; observe the pupil shape, size, symmetry and response to light; observe the efficacy, side effects and toxic reactions after drug treatment; observe the psychological status of the patient; observe the urine output and color, whether the urinary tube and stomach tube are not Unobstructed, with or without folding and distortion; observe for ventilator complications, chest tightness and dyspnea after subclavian vein puncture; observe the patient's sleep.

3.3. Respiratory care

This patient has type I respiratory failure and should be assisted by a noninvasive ventilator. The dynamic end-expiratory carbon dioxide and respiratory function should be continuously monitored; the ward environment should be kept quiet and comfortable, the air is clean, and the temperature and humidity are suitable; fresh bamboo lees should be inhaled by atomization to achieve It has the functions of clearing heat and resolving phlegm, calming essence and resuscitation; sucking sputum when necessary, clearing oral secretions in time, and keeping the airway unobstructed; taking care of tracheal intubation, changing the dressing at the tracheotomy every day, and cleaning the endotracheal cannula once to prevent Infection, take good oral care.

3.4. Medication care

The patient was in critical condition and used a variety of medications. The main medications were as follows: breviscapine was given to promote blood circulation, remove blood stasis, dredge collaterals and relieve pain; give atorvastatin calcium tablets, clopidogrel bisulfate tablets, and aspirin enteric-coated tablets to prevent thrombosis; give Fresh bamboo bitumen to clear heat and reduce phlegm; give calf serum deproteinized injection to improve cerebral circulation and nourish brain nerves; give phenagen tablets for sedation; give edaravone, compound cerebropeptide ganglioside to treat stroke; give mannitol dehydration, Reduce brain edema; give pantoprazole sodium to protect gastric mucosa. As there are many medications, it is necessary to pay attention to the compatibility of contraindications in nursing care, and observe the adverse reactions of patients.

3.5. Rehabilitation care

In order to enable patients to actively face emotional communication and promote changes in memory, attention, and volition^[5], electronic biofeedback therapy is performed once a day. Air pressure therapy refers to the use of air pumps to press on the patient's body or limbs to promote the regurgitation of venous blood or lymph fluid^[6], once a day, 30 minutes each time.

3.6. Emotional Nursing of Traditional Chinese Medicine

Nursing staff should keep abreast of the psychological demands of patients and their family members, solve their worries, and give patients a five-element music therapy once a day to relieve patients' negative emotions and improve patients' sleep. Actively communicate with patients every day to encourage and help patients build confidence in overcoming the disease.

3.7. Daily life care

Give suspended bed treatment to prevent pressure sores, and use restraint belts for protective restraint; keep the bed unit clean and dry to reduce mechanical irritation to the skin; maintain the functional position of the limbs and turn over every 2 hours; do a good job of toilet care, Keep the skin of the vulva clean and dry; pay attention to oral hygiene and take care of the oral cavity twice a day. During bed rest during the onset period, in order to prevent the patient from constipation, the patient was given a hot iron with traditional Chinese medicine to promote the patient's defecation; after the condition is relieved, the patient is instructed to transition from light activities in bed to activities in the corridor outside the hospital, and pay attention to prevent the patient from falling and falling. Ensure that the ward is quiet and comfortable, with suitable temperature and humidity, and promote patients' sleep.

3.8. Follow-up after discharge

Introduce CIE disease-related home knowledge to family members and patients, and do a good job of medication guidance, reminding to come to the hospital for review regularly. After discharge from the hospital, the responsible nurse will follow up by telephone 2-3 times a week to understand the patient's home medication and exercise rehabilitation, and follow the established rehabilitation plan in an orderly and appropriate manner. Secondly, understand the patient's psychological condition after discharge, and give correct guidance and encouragement. Remind patients to review regularly.

4. Discussion

According to statistics, cerebrovascular diseases have become the leading cause of death and disability among adults. In 2017, deaths from cerebrovascular diseases accounted for 23.28% and 20.52% of deaths in rural and urban populations, which means every five deaths. Among the patients, there is one cerebrovascular death patient, which has a higher morbidity and mortality^[7]. At present, digital subtraction cerebro angiography (DSA) is internationally recognized as the gold standard for diagnosing the nature and extent of cerebrovascular diseases. DSA examinations are often performed clinically through the femoral artery and radial artery approach^[8]. With the wide application of interventional techniques, the dosage of contrast agents has also increased. Adverse reactions caused by contrast agents have been reported frequently. The most common ones are allergic reactions, contrast

agent nephropathy, nausea, vomiting, and lack of appetite in the digestive tract. Symptoms, but contrast encephalopathy complicated by interventional therapy is relatively rare. CIE is a transient neurological dysfunction that occurs after intravascular use of contrast agents. Generally, there is no obvious abnormality in imaging examination, or local brain tissue swelling consistent with the treatment of blood supply arteries. However, the clinical symptoms are more diverse, and patients will experience intracranial hemorrhage, abnormal mental behavior, disturbance of consciousness, cortical blindness, aseptic encephalitis, seizures, and severe paralysis^[9]. The diagnostic criteria for CIE have not yet been unified. According to previous studies^[10], abnormal nervous system changes or mental abnormalities occur within a certain period of time after the use of contrast agents. After excluding other organic factors, CIE should be considered. In actual clinical work, we found that CIE often occurs 0.5-18 hours after the application of the contrast agent^[11], and most of the symptoms can be relieved from 48h to 72h^[12].

According to current studies, the pathogenesis of CIE generally includes the following points^[13-15]: (1) Contrast agents have neurotoxic effects, which can destroy the normal structure of brain cells and affect the function of cerebral cortex neurons. Related studies have found that in patients with clinical psychiatric symptoms, imaging examinations can reveal contrast-like exudation in the frontal and temporal lobes of the brain. It is speculated that the specific symptoms of contrast encephalopathy may be related to the damaged brain part^[16]. (2) The osmotic pressure of contrast agent and cerebrospinal fluid is different. The contrast agent may pass through the blood-brain barrier, leading to increased permeability and intracranial pressure, thereby affecting the function of brain nerve cells. (3) Contrast agents can affect the secretion of vasomotor substances and cause cerebral vasospasm, which may affect part of the brain function. (4) The contrast agent has a procoagulant effect. Contrast agent entering the small blood vessels in the brain may cause the blood flow to become viscous, causing the blood flow to slow down, forming thrombus, and causing acute cerebrovascular symptoms. The pathogenesis is not yet fully understood, and further research is still needed.

Although CIE is relatively rare in clinical practice, with the wide application of contrast agents in cerebrovascular diseases, the possibility of occurrence also increases, and clinical care related to it has also attracted widespread attention. The sudden onset of the patient in this case caused great pain to the patient's body and mind. Therefore, early recognition of CIE and active cooperation in rescuing the patient are the top priority of nursing. Combining the clinical symptoms of the patient with the characteristic treatment of traditional Chinese medicine can relieve the pain of the patient and control the patient's pain. As the condition deteriorates, at the same time, pay attention to the psychological changes of the patients, encourage support and guide the patients to actively recover. Nursing staff continued to provide nursing guidance after the patient was discharged from the hospital, paying attention to the subsequent recovery of the patient, and finally achieved satisfactory results. Based on the nursing and treatment status of this patient, and combining with previous research, the author has compiled a set of relatively effective nursing and treatment plans for CIE patients as follows: When CIE is suspected, imaging diagnosis such as CT or DSA should be performed as soon as possible for timely treatment. To avoid further deterioration of the condition. In the early stage of the disease, some patients have severe symptoms. At this time, medical staff are in urgent need of active rescue treatment, the application of anti-allergic drugs, supplemented by adequate hydration therapy, dehydration^[17], anti-epilepsy, sedation and other treatments. Actively use drugs to relieve the patient's neurological symptoms and primary disease, and closely observe its vital signs in order to find changes in the condition at any time. In addition to basic emergency care, medication care, and condition observation, this patient is more personalized than other case care. According to the characteristics of the patient's condition in this patient's respiratory tract care and daily life care, special Chinese medicine therapies were added, and the five-element music therapy special eroticism care was used. Finally, personalized rehabilitation care and post-hospital follow-up were supplemented. This personalized care can help patients effectively improve symptoms, alleviate pain, and speed up recovery, and can provide other researchers with a new type of nursing idea.

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