

Integrated Traditional Chinese and Western Medicine Critical Care and Rehabilitation Practice for a Patient with Cardiogenic Sudden Death and Multiple Cerebral Infarctions Caused by Patent Foramen Ovale

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Abstract

Objective To summarize the experience of integrated traditional Chinese and Western medicine nursing care for a patient with patent foramen ovale complicated by cardiogenic shock, cardiac arrest, and multiple cerebral infarctions. **Methods** The clinical data of a patient admitted to our department in May 2026 with cardiogenic shock and multiple cerebral infarctions caused by paradoxical embolism due to PFO were retrospectively reviewed, and the key nursing points were summarized, including rapid identification of in-hospital cardiac arrest and coordination of high-quality cardiopulmonary resuscitation; standardized implementation of targeted temperature management; prevention and control of complications through integrated traditional Chinese and Western medicine nursing care, including stress ulcer, gastrointestinal dysfunction, and venous thromboembolism; etiological diagnosis and individualized treatment coordination under multidisciplinary team collaboration; and assessment-based staged early rehabilitation training. **Results** After 45 d of systematic treatment and rehabilitation, the patient regained consciousness, was successfully weaned from the ventilator, and underwent tracheostomy tube removal. Muscle strength recovered to grade V in the upper limbs and grade IV in the lower limbs, and the Barthel index increased from 5 to 80. The patient was discharged with improvement. **Conclusion** A systematic nursing strategy based on precise hemodynamic regulation, characterized by integrated traditional Chinese and Western medicine prevention and control of complications, and extended by early staged rehabilitation training may help improve the prognosis of such critically ill patients.

Full Text

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Abstract: Objective To summarize the integrated traditional Chinese and Western medicine nursing experience for one patient with cardiogenic shock, cardiac arrest, and multiple cerebral infarctions caused by patent foramen ovale. **Methods** The clinical data of one patient admitted to our department in May 2026 with cardiogenic shock and multiple cerebral infarctions caused by paradoxical embolism due to PFO were retrospectively reviewed, and key nursing points were summarized, including: rapid recognition of in-hospital cardiac arrest and

coordination with high-quality cardiopulmonary resuscitation; standardized implementation of targeted temperature management; integrated traditional Chinese and Western medicine prevention and control of complications, including stress ulcer, gastrointestinal dysfunction, and venous thromboembolism; cooperation in etiological diagnosis and individualized treatment under multidisciplinary team collaboration; and assessment-based, staged early rehabilitation training. **Results** After 45 days of systematic treatment and rehabilitation, the patient regained clear consciousness, was successfully weaned from the ventilator, and had the tracheal cannula removed. Upper-limb muscle strength recovered to grade V and lower-limb muscle strength to grade IV; the Barthel Index increased from 5 points to 80 points, and the patient was discharged with improvement. **Conclusion** A systematic nursing strategy based on precise hemodynamic regulation, characterized by integrated traditional Chinese and Western medicine prevention and control of complications, and extended through early staged rehabilitation training helps improve the prognosis of such critically ill patients.

Keywords: patent foramen ovale; cardiogenic shock; critical care nursing; early rehabilitation; integrated traditional Chinese and Western medicine nursing

Integrated Traditional Chinese and Western Medicine Critical Care and Rehabilitation Practice for a Patient with Cardiac Arrest and Multiple Cerebral Infarctions Induced by Patent Foramen Ovale

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Abstract: Objective To summarize the integrated traditional Chinese and Western medicine nursing experience for a patient with cardiogenic shock, cardiac arrest, and multiple cerebral infarctions caused by patent foramen ovale (PFO). **Methods** The clinical data of a patient with cardiogenic shock and multiple cerebral infarctions caused by paradoxical embolism via PFO admitted

to our department in May 2026 were retrospectively analyzed. Key nursing interventions were summarized, including: rapid identification of in-hospital cardiac arrest and coordination of high-quality cardiopulmonary resuscitation; standardized implementation of targeted temperature management; integrated traditional Chinese and Western medicine prevention of complications (stress ulcers, gastrointestinal dysfunction, venous thromboembolism); etiological diagnosis and individualized treatment coordination under multidisciplinary team (MDT) collaboration; and assessment-based, staged early rehabilitation training.

Results After 45 days of systematic treatment and rehabilitation, the patient regained consciousness, was successfully weaned from mechanical ventilation, and was decannulated from the tracheostomy tube. Upper-extremity muscle strength recovered to grade V and lower-extremity muscle strength to grade IV. The Barthel Index improved from 5 on CCU admission to 80 at discharge, and the patient was discharged in good condition. **Conclusion** A systematic nursing strategy based on precise hemodynamic regulation, characterized by integrated traditional Chinese and Western medicine prevention of complications, and extended with early staged rehabilitation training, may contribute to improving the prognosis of such critically ill patients.

Key words: Patent Foramen Ovale; Cardiogenic Shock; Critical Care Nursing; Early Rehabilitation; Integrated Traditional Chinese and Western Medicine Nursing

Patent foramen ovale (PFO) is the most common congenital structural cardiac abnormality in adults, with a prevalence of 20%-34% among adults[1]. Under normal circumstances, PFO does not cause obvious hemodynamic abnormalities; however, when right atrial pressure increases (such as during coughing, the Valsalva maneuver, or pulmonary embolism), it can lead to right-to-left shunting. Emboli from the venous system may pass through the patent foramen ovale into the left heart system, causing paradoxical embolism. Paradoxical embolism can result in serious complications such as ischemic stroke, myocardial infarction, and peripheral arterial embolism, among which cryptogenic stroke has received the greatest attention.

However, cases in which paradoxical embolism caused by PFO directly induces cardiogenic shock and cardiac arrest are extremely rare in clinical practice, and related nursing reports in China and abroad are very limited. Nursing care for such patients faces multiple severe challenges: after successful resuscitation from cardiac arrest, how to provide precise hemodynamic support and multi-organ function protection; the dynamic balance between anticoagulant therapy and the risks of progression/hemorrhage in the acute phase of cerebral infarction is difficult to grasp; long-term mechanical ventilation leads to respiratory muscle dysfunction and difficulty in weaning; when cardiogenic and neurogenic dysfunction are intertwined, there is a lack of mature experience regarding the timing, safety, and implementation pathway for initiating early rehabilitation [2].

In May 2026, our department admitted one patient with cardiogenic shock, cardiac arrest, and multiple cerebral infarctions caused by paradoxical embolism due to PFO. A multidisciplinary collaborative team composed of the Department of Critical Care Medicine, Neurology, Rehabilitation, Traditional Chinese Medicine, and Clinical Nutrition was established [3]. On the basis of precise hemodynamic support, traditional Chinese medicine nursing techniques were innovatively integrated into the complication prevention and control system, and a staged early rehabilitation strategy featuring “shifting the checkpoint forward” was implemented. After 45 days of systematic treatment and nursing care, the

patient had a favorable outcome. This article aims to summarize the experience of integrated traditional Chinese and Western medicine critical care nursing and rehabilitation in this case. The report is as follows:

1 Medical History

The patient, female, 44 years old, was admitted on May 9, 2026, with the chief complaint of intermittent dyspnea for more than 1 year, aggravated for 1 week with lower-limb edema. More than 1 year earlier, she developed dyspnea when climbing stairs; she felt discomfort after climbing 3–4 floors, which could be relieved after resting for several minutes. During the past week, the dyspnea had worsened significantly, accompanied by edema of both lower limbs and abdominal distension. She had a previous history of elevated myocardial enzymes and denied a history of hypertension or diabetes.

Physical examination on admission: body temperature 36.5 °C, blood pressure 112/60 mmHg, heart rate 89 beats/min, respiratory rate 20 breaths/min. Breath sounds in both lungs were coarse, with scattered moist rales audible. The heart rhythm was regular, and mild pitting edema was present in both lower limbs.

Auxiliary examinations: abnormal myocardial enzyme profile: creatine kinase 289 U/L, creatine kinase isoenzyme 37.4 ng/ml, high-sensitivity cardiac troponin I 0.38 ng/ml; abnormal liver function; electrocardiogram showed low-flat or inverted T waves in leads II, III, and aVF. Cardiac ultrasound indicated a left ventricular ejection fraction of 45%.

Clinical course: In the early morning of May 10, 2026, the patient suddenly developed impaired consciousness and did not respond to verbal stimuli; electrocardiographic monitoring showed an escape rhythm. Nursing staff identified cardiac arrest at the first moment, immediately activated the emergency rescue protocol, and assisted physicians in performing cardiopulmonary resuscitation. Through chest compressions, intermittent intravenous bolus injections of epinephrine, and multiple

After dopamine, spontaneous cardiac rhythm recovered. The patient was immediately intubated, connected to an invasive ventilator for assisted ventilation, and transferred to the CCU.

On admission to the CCU, body temperature was 35.8 °C, heart rate 128 beats/min, respiratory rate 32 breaths/min, blood pressure 72/45 mmHg, and oxygen saturation 82%. Continuous norepinephrine infusion was administered for vasopressor support, recombinant human brain natriuretic peptide was given to treat heart failure, and targeted temperature management with an ice blanket and ice cap was performed to protect brain function. After consultation with the Department of Neurology, and in combination with cranial CT and MRI findings, acute multiple cerebral infarctions involving both cerebral hemispheres were considered. Edaravone was administered to scavenge oxygen free radicals,

and citicoline sodium was given to nourish brain cells. Bedside transesophageal echocardiography suggested patent foramen ovale and a positive right-heart contrast echocardiography result; after the Valsalva maneuver, a large number of microbubbles were seen entering the left atrium. Dynamic electrocardiography showed second-degree type I atrioventricular block, with the longest RR interval of 2.1 s.

On May 16, during an attempt at ventilator weaning and extubation, the patient suddenly developed a decrease in SpO_2 to 78% and a sharp drop in blood pressure to 80/50 mmHg. Weaning was immediately discontinued, the ventilator was reconnected, and endotracheal intubation was performed again. Because the patient had weak respiratory muscle strength and difficulty weaning from the ventilator, percutaneous tracheotomy was performed on May 19. On May 20, after sedative medications were gradually reduced and discontinued, the patient's consciousness changed to somnolence, and the patient was able to cooperate with simple commands, such as opening the eyes and shaking hands. Beginning on May 21, intermittent daily attempts at weaning were made, but these were unsuccessful because of carbon dioxide retention, with PCO_2 persistently >60 mmHg. On May 25, the patient's spontaneous respiratory strength improved significantly, and the patient was successfully liberated from the ventilator. On June 17, after progressive occlusion training, the tracheostomy tube was successfully removed.

2 Nursing Care

2.1 Nursing Assessment

2.1.1 Assessment of activities of daily living Using the Barthel Index, the patient was assessed as having a score of 5, indicating severe functional impairment and requiring extensive assistance to complete activities of daily living.

2.1.2 Traditional Chinese medicine nursing assessment Inspection: in the acute phase, the patient had clouding of consciousness, a pale complexion, and cyanotic lips; during the recovery phase, the complexion gradually became rosy, and the tongue body changed from dark purple to pale red. Auscultation and olfaction: in the acute phase, respiration was weak; during the recovery phase, respiration gradually became even. Inquiry, as reported by family members: the patient previously experienced shortness of breath on exertion and palpitations. Palpation: in the acute phase, the pulse was faint and thready, nearly imperceptible, and the limbs were cold beyond the knees; during the recovery phase, the pulse gradually became stronger.

2.2 Nursing Diagnosis

Western medical nursing diagnoses: (1) decreased cardiac output: related to reduced myocardial contractility caused by paradoxical embolism due to patent

foramen ovale; (2) impaired gas exchange: related to acute pulmonary edema and alveolar congestion and exudation caused by heart failure; (3) impaired physical mobility: related to impaired cardiac function, decreased limb muscle strength, prolonged bed rest,

Related to restrictions imposed by invasive tubes. (4) Potential complications: stroke and multiple organ failure, related to rapid progression of the disease.

TCM nursing diagnoses: (1) Sudden collapse of heart yang: related to failure of heart qi and imminent collapse of yang qi; manifested as clouded consciousness, cold extremities, and a faint pulse on the verge of disappearing. (2) Phlegm obstructing the brain collaterals: related to phlegm and blood obstructing the clear orifices; manifested as impaired consciousness and difficulty with limb movement. (3) Deficiency of healthy qi: related to depletion from prolonged illness and dysfunction of the zang-fu organs; manifested as difficulty weaning from mechanical ventilation and slow recovery of muscle strength.

2.3 Nursing Plan

Based on the patient's individual condition, nursing goals were established as follows:

- (1) During the acute phase, closely monitor circulatory, respiratory, and organ functions; rapidly correct shock; and prevent critical complications such as bleeding, infection, pressure injuries, and deep vein thrombosis;
- (2) After the condition stabilizes, implement phased rehabilitation training for breathing, limb function, balance, and self-care ability, combined with TCM interventions including acupoint massage, emotional counseling, and syndrome-differentiated dietary therapy, in order to improve physical discomfort and enhance activity tolerance and comfort.

2.4 Nursing Measures

2.4.1 Emergency Nursing Cooperation for Cardiac Arrest

The patient suddenly lost consciousness, and electrocardiographic monitoring indicated an escape rhythm. Nursing staff identified cardiac arrest at the earliest possible moment and immediately initiated the emergency response plan, assisting the physician in performing external chest compressions (compression depth 5–6 cm, frequency 100–120 compressions/min), ensuring that interruptions in compressions were minimized. As prescribed, intermittent intravenous bolus injections of epinephrine and dopamine were administered, and the physician was assisted in completing endotracheal intubation and connection to an invasive ventilator. During resuscitation, nursing staff had clearly defined roles and were respectively responsible for chest compressions, medication administration, documentation, and respiratory support, ensuring that the rescue process was efficient and orderly. After active resuscitation, the patient regained

an autonomous cardiac rhythm and was transferred to the CCU for continued treatment.

2.4.2 Hemodynamic Monitoring and Management of Vasoactive Drugs

2.4.2.1 Invasive Hemodynamic Monitoring After admission to the CCU, the patient received continuous ECG monitoring, with monitoring of heart rate, cardiac rhythm, blood pressure, oxygen saturation, and central venous pressure. Real-time blood pressure data were obtained through invasive arterial blood pressure monitoring, providing a basis for precise adjustment of vasoactive drugs. Key nursing points: (1) keep the arterial pressure-monitoring line unobstructed and check whether the waveform is normal during each shift; (2) calibrate the zero point once every 2 hours; (3) observe the puncture site for oozing or hematoma, and strictly implement aseptic technique.

2.4.2.2 Precise infusion of vasoactive drugs During the patient's cardiogenic shock, norepinephrine was continuously infused to maintain blood pressure, with systolic pressure maintained at 80–85 mmHg; the infusion rate was gradually adjusted according to hemodynamic monitoring results. Recombinant human brain natriuretic peptide was also infused to treat heart failure and reduce pulmonary hypertension. Nursing key points: (1) use a microinjection pump for precise drug administration, with two-person verification of drug concentration and pump rate; (2) record blood pressure and pump rate once every hour, and promptly report blood-pressure fluctuations to the physician; (3) when replacing the syringe, use seamless pump switching to avoid blood-pressure fluctuations; (4) observe for adverse drug reactions, such as arrhythmia and hypotension.

2.4.3 Targeted temperature management after resuscitation After cardiopulmonary resuscitation, the patient had a Glasgow Coma Scale score of 3T under sedation and had severe cerebral ischemic-hypoxic injury. Following the physician's orders, cooling therapy with an ice blanket and ice cap was administered, with a target body temperature of 34–36 °C. Nursing key points: the body-temperature setting was 34–36 °C, and the water-temperature setting was 8–10 °C. Nursing key points: (1) closely monitor core body temperature, record it every 30 minutes, and ensure that body temperature remains stable within the target range; (2) observe the skin at the contact sites of the ice blanket and ice cap to prevent frostbite, checking once every 2 hours; (3) during mild hypothermia therapy, the patient is in a sedated state, so eye protection should be strengthened to prevent corneal dryness; (4) during the rewarming phase, strictly control the rewarming rate (0.25–0.5 °C/h) to avoid rebound hyperthermia[4]. During mild hypothermia therapy, the patient's body temperature was maintained at 35.8–36 °C, and no complications such as skin frostbite occurred. During mild hypothermia therapy, acupoint stimulation was combined to pro-

mote recovery of brain function. Selected acupoints: Shuigou (to awaken the spirit and open the orifices), Neiguan (to calm the heart and tranquilize the spirit), and Yongquan (to guide fire back to its source). Method: twice daily; each acupoint was pressed for 1-2 minutes, with the endpoint being the patient's response, such as frowning. At the same time, traditional Chinese medicine oral care was provided: Angong Niuhuang pills were dissolved in water and used for oral wiping twice daily, preventing oral infection while also exerting the effect of awakening the spirit and opening the orifices[5].

2.4.4 Ventilator management and airway care After tracheal intubation, the patient received assisted ventilation with an invasive ventilator; later, because of difficulty weaning from the ventilator, percutaneous tracheotomy was performed. Nursing key points: (1) properly secure the endotracheal tube/tracheostomy cannula, and measure and record the external exposed length each shift (the distance at the incisors was 22 cm/the tracheostomy cannula was well secured); (2) suction sputum as needed, strictly follow aseptic technique, and provide pure oxygen ventilation for 2 minutes before and after suctioning; (3) closely monitor blood-gas analysis results and adjust ventilator parameters in a timely manner. Blood-gas analysis showed pH 7.10 and PCO₂ 125.52 mmHg, suggesting severe respiratory acidosis,

After adjustment of the ventilator parameters, the pH gradually returned to 7.40. (4) Airway humidification was maintained using a heated humidifier, with the humidification temperature kept at 37°C. (5) Spontaneous breathing was assessed daily, and spontaneous breathing trials were performed to evaluate indications for weaning from mechanical ventilation^[6]. Extubation after attempted weaning was considered; however, because the patient had weak spontaneous respiration and CO₂ retention, tracheotomy was performed. At the same time, the acupoints Feishu (to diffuse the lung and regulate qi), Danzhong (to broaden the chest and regulate qi), and Tiantu (to direct counterflow downward and relieve dyspnea) were selected. Pressing and kneading were performed twice daily for 1-2 minutes each time to dredge the qi movement of the lung meridian. After respiratory-muscle rehabilitation training, the patient was ultimately successfully weaned from mechanical ventilation.

2.4.5 Prevention and Control of Complications with Integrated Traditional Chinese and Western Medicine

2.4.5.1 Prevention and nursing care of stress ulcer:

Coffee-ground material was drained from the patient's gastric tube, and the fecal occult blood test was positive; stress ulcer complicated by gastrointestinal bleeding was considered. Key nursing points: (1) administer somatostatin and omeprazole by pump infusion as prescribed to inhibit gastric acid secretion; (2) withhold food and water, then gradually transition to enteral nutrition; (3) observe the color, characteristics, and drainage volume of gastric fluid hourly;

(4) monitor changes in hemoglobin and blood urea nitrogen daily, and assess for active bleeding. After active management, the patient's hemoglobin level tended to stabilize, and no massive bleeding occurred.

2.4.5.2 Integrated traditional Chinese and Western nursing care for gastrointestinal dysfunction related to mechanical ventilation:

This was considered to be associated with increased intra-abdominal pressure caused by mechanical ventilation, insufficient intestinal perfusion, and the use of broad-spectrum antibiotics. Traditional Chinese medicine syndrome differentiation identified spleen deficiency with exuberant dampness and dysfunction of intestinal transport; treatment focused on strengthening the spleen, eliminating dampness, regulating qi, and relieving distension.

- (1) **Acupuncture nursing care:** The selected acupoints included Dachangshu, Pishu, Zhongwan, Tianshu, Zusanli, Shangjuxu, etc.^[7] Key nursing points: provide reassurance and explanation before needling to obtain cooperation; assist the patient in assuming a comfortable recumbent position and fully expose the acupoints; closely observe the patient's response during needle retention and ask about discomfort; after needle removal, press the needle holes and observe for bleeding or hematoma; during retention of intradermal needles, avoid strenuous activity, and check daily for detachment, displacement, and skin allergy.
- (2) **Nursing care for oral administration and external application of Chinese medicine:** As prescribed, Chinese herbal granules (a spleen-strengthening and dampness-eliminating formula) were mixed with warm water and administered via nasogastric feeding twice daily. Key nursing points: administer by nasogastric feeding 30 minutes after meals, at a temperature of 38–40°C; before nasogastric feeding, aspirate through the gastric tube to assess the residual volume; when it is >150 ml, suspend administration and report to the physician; apply the herbal residue externally to the Zhongwan and Guanyuan acupoints at approximately 40°C once daily, 20–30 minutes each time, and observe the local skin for redness or burns^[8].
- (3) **Enteral nutrition management:** A short-peptide formulation was selected to reduce the intestinal burden; continuous infusion via a nutrition pump was used, starting at 20 ml/h and increasing by 10–20 ml/h every 12 hours; the temperature of the nutrient solution was maintained at 38–40°C; abdominal distension, diarrhea, and gastric retention were assessed hourly, and the infusion rate was adjusted in a timely manner.^[9]

2.4.5.2 Prevention of Venous Thromboembolism

The patient was bedridden for a prolonged period, was in a hypercoagulable state, and also had concomitant cerebral infarction; therefore, balancing anticoagulant therapy against the risk of bleeding was a key nursing challenge. The

nursing points were as follows: (1) anticoagulant therapy with low-molecular-weight heparin was administered as prescribed by the physician; (2) the circumference, skin temperature, and color of both lower limbs were observed daily to assess for deep venous thrombosis; (3) an intermittent pneumatic compression device was used twice daily.

In addition to Western medical anticoagulant therapy, acupoint massage of the lower limbs was performed, with selected points including Xuehai (SP10), Zusanli (ST36), and Sanyinjiao (SP6), twice daily, to promote blood circulation, remove blood stasis, and unblock the meridians and collaterals. At the same time, Chinese herbal fumigation and washing of both lower limbs was administered using decoctions of blood-activating and stasis-resolving herbs such as safflower, mugwort leaf, and Chuanxiong; the temperature was kept at 38–40°C, once daily, 15–20 minutes each time. The skin condition was carefully observed to prevent scalding.

2.4.6 Early Rehabilitation Training Based on Assessment

After the patient regained clear consciousness, the rehabilitation team conducted a systematic assessment: upper-limb muscle strength was grade IV, lower-limb muscle strength was grade III, the patient was able to sit with support against the bed, balance ability was grade 0, and performance in finger-to-finger and finger-to-nose coordination training was poor (3 points).[10] A staged rehabilitation plan was formulated according to the assessment results.

Stage 1 (May 14–May 19): Passive activity was the main approach. When the patient was in a sedated state, passive activities were emphasized: massage of the shoulders and back, manual release of the intercostal muscles and diaphragm, passive movement of the joints of all four limbs, and treatment of both lower limbs with a blood-circulation drive pump to prevent deep venous thrombosis of the lower limbs and muscle atrophy.

Stage 2 (May 20–May 25): Transition from assisted active training to active training. After the patient regained clear consciousness, individualized training was implemented according to the assessment results: (1) upper-limb training: the patient was guided in active training; manual hand-function training was used to exercise fine finger movements, together with upper-limb elbow flexion and chest-expansion exercises; (2) lower-limb training: assisted active training was provided, gradually progressing from hip and knee flexion, straight-leg raising, and leg opening-and-closing movements to independent completion; (3) core training: training progressed from assisted bridging exercises to independent completion, combined with pelvic-floor muscle training; (4) activities-of-daily-living training: lip and tongue movements were guided, and after the Wada water-swallowing test, the patient gradually began taking small amounts of water and food orally, including enteral nutrition emulsion, yogurt, rice paste, and porridge; the patient practiced independently wiping the face and combing the hair, and was assisted with putting on and taking off clothing and with defeca-

tion in bed; (5) pulmonary-function training: after tracheostomy, the patient was instructed in pursed-lip breathing, abdominal breathing, and thoracic

expansion exercises and effective coughing training. (6) Balance and coordination training: progression from bed-supported sitting to independent sitting, followed by exercise training in the sitting position. After balance ability reached grade 2 or above and finger-to-finger and finger-to-nose coordination training was completed, the patient was guided in bed-chair transfer and standing at the bedside^[11].

The third stage (after May 26): strengthening of active training and gait training. Assessment showed that the patient's upper-limb muscle strength had recovered to grade V, lower-limb muscle strength to grade IV, balance ability to grade 2 or above, and coordination ability to 4-5 points, with marked improvement^[12]. On the basis of continued active training of the upper and lower limbs, quadriceps strengthening was added, including straight-leg raises in the sitting position and squats in the standing position, as well as independent walking at the bedside. Activities of daily living further improved: independent eating, with transition from a semi-liquid diet to a low-salt, low-fat diet; tooth brushing; face washing; hair combing; dressing and undressing; and independent defecation at the bedside. Respiratory training was supplemented with resisted respiratory-muscle training, including resisted diaphragmatic training and balloon blowing. Balance training was supplemented with single-leg standing training, progressing from eyes open to eyes closed. Flexibility training included the back-scratch test and the chair forward-reach test. After systematic rehabilitation training, the patient's limb function and activities of daily living improved significantly.

After the patient's spontaneous breathing became stable, trial occlusion training of the tracheostomy cannula was initiated on June 17. A gradual occlusion protocol was adopted: occlusion for 30 minutes on the first day, extension to 1-2 hours on the following day, and then daily increases in occlusion time. Changes in oxygen saturation and respiratory rate were observed to ensure that SpO₂ remained above 95% and that breathing stayed stable during occlusion. During occlusion, the patient was instructed to undergo speech rehabilitation training: starting with monosyllabic vocalization ("ah," "oh"), gradually progressing to disyllabic words ("drink water," "eat"), and then to short sentences ("I want to sit up," "I feel much better today"). Training was performed once each morning and once each afternoon, 15-20 minutes each time^[13]. Throughout the training process, nurses accompanied the patient, provided timely positive feedback, and strengthened the patient's confidence. As the occlusion time was extended day by day, the patient had no discomfort such as chest tightness or shortness of breath, and the tracheostomy cannula was successfully removed. After decannulation, the incision site was covered with sterile dressing, and the healing status was observed with daily dressing changes. On the third day after decannulation, the incision had already shown obvious reduction in size; before discharge, the incision had healed, leaving only a fine scar. The patient

s articulation was clear, and normal communication was possible.

2.4.7 Psychological Care

After the patient regained clear consciousness, anxiety, irritability, low mood, and other manifestations appeared because of limb dysfunction, limited speech, and difficulty weaning from mechanical ventilation. Traditional Chinese medicine emotional counterbalance therapy was adopted, based on the principle that “joy overcomes worry,”

Combined with music therapy to regulate emotions, music such as *Wild Geese Descending on the Sandbank*, *Jiangnan Hao*, and *Zizhu Diao* was played to help the patient relieve liver stagnation and uplift the spirit.

2.5 Nursing Evaluation

After 45 d of treatment and nursing care, the patient’s overall condition improved significantly. The dynamic changes in key functional indicators are shown in Table 1.

Date	Barthel score	Consciousness status: GCS	Upper-limb muscle strength	Lower-limb muscle strength	SAS score	Cardiac function (NYHA class)
Admission to CCU (May 10)	5	3T points (sedated)	Unable to cooperate	Unable to cooperate	Unable to cooperate	Class IV
May 20	5	10 points (somnolence)	Grade III	Grade II	62	Class IV
May 30	35	15	Grade IV	Grade III	58	Class III
Before discharge, June 24	80	15	Grade V	Grade IV	40	Class II

3 Follow-up

One week after discharge, follow-up was conducted by telephone and WeChat video. The patient was taking medications regularly and had no bleeding tendency such as gingival bleeding, epistaxis, skin ecchymosis, melena, or hematuria, and no neurological symptoms such as dizziness, headache, limb numbness, or speech disturbance. The next step was planned as patent foramen

ovale closure at a higher-level hospital. The patient had been instructed to continue rehabilitation training during the preoperative waiting period (indoor walking for 20–30 min daily; use of a respiratory trainer for 10 min, twice daily) and traditional Chinese medicine nursing care (soaking the feet in warm water before sleep; massaging the Zusanli and Yongquan acupoints for 3 min each), to maintain a good physical and mental state and undergo surgery in optimal condition.

4 Discussion

The practice of integrated traditional Chinese and Western medical nursing in this case shows that the value of traditional Chinese medicine nursing lies not only in the application of specific techniques, but also in its clinical thinking model centered on the holistic concept and syndrome differentiation and treatment, which provides unique methodological guidance for individualized nursing decision-making. Conventional critical care is mostly implemented according to standardized guidelines, whereas critically ill patients often present with complex conditions involving multisystem dysfunction and dynamic evolution of syndromes; standardized protocols are difficult to cover all clinical scenarios. In this case, traditional Chinese medicine syndrome differentiation revealed Western medical indicators

did not fully reflect the pathological features—such as gastrointestinal dysfunction caused by “spleen deficiency with exuberant dampness”; conventional prokinetic drugs had limited efficacy. By contrast, the syndrome-differentiation-based Jianpi Huashi formula combined with acupoint stimulation directly targeted the core pathogenesis and enabled enteral nutrition to reach the standard smoothly within 1 week. This dynamic closed-loop management of “syndrome differentiation-implementation-evaluation” is highly consistent with the concept of modern precision medicine in which intervention strategies are formulated on the basis of individual characteristics, and may be regarded as a concrete form of precision nursing practice in the context of traditional Chinese medicine. Notably, the application of traditional Chinese medicine in severe illness has long faced skepticism regarding empiricism. In this case, the traditional Chinese medicine syndrome-differentiation system was combined with objective quantitative indicators of Western medicine, achieving “evidence-based syndrome differentiation and measurable efficacy,” which provides a feasible pathway for promoting standardized integrated Chinese and Western medicine nursing.

Patient informed consent: Informed consent for publication of the case report was obtained from the patient and family members.

Conflict of interest statement: The authors declare that there are no conflicts of interest in this article.

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Note: Figure translations are in progress. See original paper for figures.

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