Case Study

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Integrating Psychological Support into Early Stroke Rehabilitation: A Case Study

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Abstract: Early rehabilitation after stroke is crucial to the comprehensive recovery of patients. Integrating psychological support into early stroke rehabilitation plays a significant role in promoting overall recovery. Timely, scientific, and full-course rehabilitation treatment is of great importance in disease management and functional recovery.

Keywords: Psychological support; early stroke rehabilitation

Introduction

Early rehabilitation after stroke is vital to the patient's overall recovery. Studies have shown that the first 72 hours after brain injury represent the period of highest neural plasticity, during which the brain possesses a strong capacity for recovery and reorganization. Early rehabilitation not only helps reduce postoperative complications but also enables patients to regain daily living skills sooner and improve their quality of life [1][2].

After stroke, the brain reorganizes and establishes new neural networks to adapt to new physical conditions. Early rehabilitation helps patients seize this critical period and promotes the reconstruction of neural networks through repeated stimulation and training, thereby accelerating the recovery of limb function [1][2].

Case Presentation

Patient Information: "Tu Ma," female, 62 years old

Medical History Summary: Hospitalization date: August 25, 2025

Diagnosis:

1)Acute heart failure

2) Acute cerebral infarction

3) Grade 3 hypertension, very high-risk group

4) Type 2 diabetes mellitus

5) Atrial fibrillation with rapid ventricular response

6) Coronary atherosclerotic heart disease, stable angina, cardiac function Class IV

7) Acute bronchitis

8) Renal insufficiency

9) Hyperuricemia

10) Hypokalemia

11) Hyperhomocysteinemia

12) Aortic, mitral, and tricuspid valve regurgitation

13) Multiple serous cavity effusions

14) Respiratory alkalosis with compensatory metabolic acidosis

15)Lactic acidosis

16)Sleep disorder

Admission Condition and Treatment Course:

The patient was admitted due to "wheezing and chest tightness for 1 day, worsening for 2 hours." Physical examination: Temperature 36.6 °C, pulse 160 bpm, respiration 22 breaths/min, blood pressure 136/75 mmHg. The patient was conscious with fair mental status. No enlargement of superficial lymph nodes. Pupils equal and round with prompt light reflex. Lips without cyanosis, oral mucosa without petechiae. Tongue midline without tremor. No pharyngeal congestion, tonsils not swollen, no purulent discharge. Neck soft without resistance. Percussion of both lungs clear; breath sounds clear; moist rales audible bilaterally; no pleural friction rub. Abdomen distended without tenderness or muscle tension. Liver and spleen not palpable below the costal margin. Murphy's sign negative. No percussion pain in liver or kidney regions. Bowel sounds normal. Skin of both lower limbs without pigmentation. Limb muscle strength and tone normal. Physiological reflexes present; Babinski sign negative.

After admission, the patient underwent relevant auxiliary examinations:

Arterial blood gas analysis; ECG: atrial fibrillation with rapid ventricular rate, secondary ST-T changes; WBC 14.54×10⁹/L; D-dimer screening test 598.05 ng/mL; Creatinine 185.90 μmol/L; Glucose 16.89 mmol/L; Cardiac + carotid ultrasound: pulmonary artery dilatation, enlarged left heart, aortic valve calcification with mild regurgitation, mild-to-moderate mitral regurgitation, mild-to-moderate tricuspid regurgitation, mild pulmonary hypertension, small pericardial effusion, reduced left ventricular diastolic function, no obvious abnormalities in systolic function; Abdominal effusion; Cranial CT: possible left frontal lobe infarction, lacunar infarction in the left basal ganglia; NT-proBNP 17329.00 pg/mL; Myoglobin 118.73 ng/mL; Cranial CT on 2025/9/1: post-infarction hemorrhage in the left frontal lobe (new finding)

Treatment included: anti-infection, sputum reduction, bronchodilation, anti-inflammation, acid suppression and gastric protection, reduction of myocardial oxygen consumption, anti-aldosterone, inhibition of ventricular remodeling, anticoagulation, blood glucose control, blood pressure control, diuresis to reduce cardiac load, stabilization of cardiac electrophysiology, vasodilation, improvement of blood circulation, clearance of oxygen free radicals, establishment of collateral circulation, antiplatelet aggregation, lipid regulation and plaque stabilization, electrolyte balance maintenance, physical therapy, and symptomatic supportive treatment.

Problem Overview:

After stroke, the patient presented with irritability, emotional agitation, resistance to treatment, and insomnia.

Intervention Process

1. Background Assessment and Analysis

(1) Early Rehabilitation Status

The patient, "Tu Ma" (pseudonym), had acute heart failure and atrial fibrillation, and therefore began rehabilitation training within 72 hours after stroke. Early rehabilitation focused primarily on limb function training with a personalized training plan, including both passive and active exercises, gradually increasing the intensity and difficulty. Passive training included mobilization of major joints such as the hips, knees, and elbows to reduce muscle tone-related injury and prevent adhesions of muscles and joints. Activity intensity was gradually increased based on the patient's cardiac functional tolerance. Additionally, electrical stimulation for 20 minutes daily was applied to the upper and lower limbs to enhance muscle strength, laying the foundation for subsequent active recovery.

Speech rehabilitation: Since the patient was unable to speak after the stroke, targeted interventions were carried out according to the specific characteristics of her language impairment. These interventions included mouth-shape demonstration, phonetic exercises, and listening-and-speaking training to help restore speech function.

(2) Psychological Rehabilitation

After stroke, patients are prone to psychological issues and require psychological counseling and intervention to build confidence and cope positively with difficulties. Conversations with psychologists or counselors can help patients better manage emotional distress [3][4].

For this patient, from August 25 to 26, she was in critical condition with fluctuating consciousness and did not exhibit significant treatment resistance. On August 27, her consciousness improved and she could

understand the language spoken by others but remained unable to speak. After visits from non-immediate family members, she exhibited emotional agitation and resisted treatment. Clinical observation ruled out discomfort caused by pathological pain. Analysis of the visitors' conversations suggested that topics such as "sending the elderly to a nursing home due to lack of care at home" likely triggered psychological discomfort, leading to emotional disturbance.

2. Intervention Strategies

Psychological counseling, mindfulness training, social support reconstruction, psychological support, and professional skill guidance were integrated into all aspects of early rehabilitation training.

The patient was provided with psychological counseling, while family members and caregivers received education to assist in psychological support. Behavioral observation revealed that on August 27, after a visit from relatives, the patient exhibited the behavior of pressing the unaffected limb against the affected limb. After ruling out pathological causes, it was analyzed that the patient's psychological intention was to "hide the affected limb." The family was advised to reduce visits from relatives to alleviate the patient's sense of "illness stigma."

From August 28 to 29, with fewer visits from relatives, the patient's emotions gradually stabilized. She could produce minimal verbal expressions of about one character per utterance with clear articulation, primarily in Mandarin, having temporarily "forgotten" her usual dialect.

On August 30, the patient could imitate sentences in Mandarin containing up to nine characters, for example: "Yuxiang rousi hao chi de rousi" ("Fish-flavored shredded pork is delicious"). As the patient was a food enthusiast, language training was tailored using familiar food-related content. For instance, when asked "What would you like to eat?" if no response was given, the patient was offered a choice such as "dumplings or buns," helping her express her thoughts, facilitating language recovery, and enhancing self-confidence.

On September 1, after a visit from her husband, the patient became emotionally agitated and used dialectal profanity. Due to the heightened emotional response, the husband was asked to leave temporarily. Family interviews revealed marital tension and minimal care from the husband during hospitalization. When asked why he rarely visited, he explained, "I stay at home catching mice; seeing my wife makes me want to cry." His behavior reflected fear, avoidance, and sadness. Guidance was provided to the husband to visit daily, initially sitting quietly at a distance from the patient. Even if the patient became agitated, he was advised not to leave immediately. Gradually, visit duration and proximity were increased to promote interaction and emotional connection.

By September 12, the patient exhibited stable vital signs: pulse 70 bpm, blood pressure 128/79 mmHg. She was conscious and able to produce short phrases, with slight facial asymmetry. Respiratory, cardiovascular, abdominal, and limb examinations were generally unremarkable, except for right upper limb muscle strength graded 2/5 and right lower limb 3/5, with normal muscle tone.

After discharge, continued rehabilitation and nursing were implemented at home. Family members were instructed in rehabilitation knowledge to assist the patient, facilitating comprehensive recovery. High-quality home care reduces complications and improves self-care ability and quality of life. Home care included regular turning, back percussion for sputum clearance, dietary care, and psychological support.

After discharge according to medical advice, the patient "Tu Ma" continued a combined outpatient and home rehabilitation program. Prior to discharge, the family was guided to prepare the home environment as follows:

(1)**Home rehabilitation equipment preparation** – necessary tools and devices for physical exercises.

(2)**Environmental preparation** – the patient's room was rearranged with cool colors such as white, blue, and green to reduce agitation and hyperactivity.

(3)**Skill preparation** – family members were trained in home rehabilitation techniques and caregiving skills.

After returning home, the patient experienced two consecutive nights of insomnia, agitation, irritability, and verbal aggression, with worsened sleep disturbances compared to hospitalization. Analysis of contributing factors identified:

(a) Pathological, pharmacological, and behavioral factors: Brain infarction caused localized brain damage, resulting in disturbances in arousal and sleep

patterns, and affecting neurotransmitter pathways. Altered intracranial pressure or cerebral vasospasm caused pain, contributing to sleep disturbances. The patient had a habit of using the unaffected limb to press the affected limb, poor positioning, and impaired circulation, leading to pain and distal limb numbness. Diuretics such as furosemide and spironolactone caused increased urination. Low daytime activity and nighttime lighting reduced melatonin secretion, further disrupting sleep rhythms. Inadequate caregiving from her husband, including frequent diaper changes and lack of skill, also affected sleep quality.

(b) Psychological factors: As brain function partially recovered, the patient regained some cognitive and executive function. However, loss of physical control and limited mobility led to health concerns, uncertainty about future life, and symptoms of depression and anxiety.

Intervention strategies included: adjusting the timing of diuretic medications, encouraging outdoor exposure to sunlight during the day, facilitating social interaction with neighbors to desensitize "illness stigma," and promoting cognitive, language, and social skills. Fear was addressed by gradually helping the patient adapt to lights-off sleep, supporting melatonin secretion, and building confidence.

By September 15, after psychological counseling, the patient's mood stabilized, and she was able to stand. During home rehabilitation, her language became clearer, logical expression improved, and she could walk with assistance.

On September 24, the patient was readmitted for the second stage of rehabilitation, cooperating well with therapy.

On September 25, during hospitalization, the patient became emotionally agitated and cried after rehabilitation. After excluding excessive training intensity as a factor, communication revealed that her distress was due to sadness and feelings of helplessness. Compared to previous episodes, her emotional reactions were milder, indicating improved brain function, enhanced emotional regulation, and better cognitive ability. Psychological counseling was provided to enhance patient confidence. Family education was reinforced: her husband was instructed to show patience and forgiveness, avoid verbal provocation, and maintain supportive behavior, while other family members were encouraged to manage their own actions, offer praise, and reduce criticism. These measures aimed to stabilize the emotional state of both the patient and family, preventing psychological breakdown due to inability to face reality, and encouraging active cooperation in rehabilitation therapy.

3. Key Turning Points

September 15: Integration of home rehabilitation with therapy showed active patient participation.

September 25: Emotional and psychological changes were observed, reflecting improved emotional regulation and coping ability.

4. Outcome Evaluation

Early rehabilitation achieved remarkable results. The patient progressed from right lower limb muscle strength grade 0 and inability to speak to walking several dozen steps, speaking short sentences, and simple communication. Her emotional state stabilized, and she cooperated well with treatment.

5. Reflections and Considerations

(1)Early rehabilitation should avoid overexertion; training must be gradual to prevent exacerbation of the condition.

(2)Patients and family members should maintain a positive attitude throughout rehabilitation, overcoming difficulties. Establishing confidence is especially important for critically ill patients.

(3)Active management of comorbidities such as hypertension, diabetes, heart failure, and atrial fibrillation is essential to prevent recurrent stroke. Lifestyle modifications and appropriate physical activity are recommended.

(4)Physicians and psychologists should focus on educating and training patients and their families, helping them understand the rehabilitation process and caregiving skills, providing timely psychological counseling and support, and assisting patients in recovering from the psychological impact of illness.[3][4][5]

Conclusion

Integrating psychological support into early stroke rehabilitation is of vital importance for the patient's comprehensive recovery. Timely, scientific, and full-course rehabilitation treatment plays a crucial role

in disease management and functional recovery. Psychological rehabilitation is as important as physical recovery, and early, structured, and emotionally stable rehabilitation has significant clinical value.[3][4][5][6]

Ethics Statement

The patient and her family were fully informed about the purpose and content of this report and provided consent for the use and publication of the clinical information.

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