The Influence of the Staged Nursing Model on the Postoperative Neurological Function and Limb Motor Function of Patients with Cerebral Hemorrhage

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Abstract: *Objective*: To explore the influence of staged nursing on neurological function and limb motor function after cerebral hemorrhage surgery. *Methods*: From April 2024 to August 2025, 68 patients with cerebral hemorrhage were selected as the research subjects. The patients were evenly divided into two groups by the digital random table method. The control group received routine care, while the observation group received staged care. The nursing effects were compared. *Results*: The improvement effect of neurological function and limb motor function in the observation group was more obvious than that in the control group ($P < 0.05$). The quality of life of the observation group was significantly improved compared with that of the control group ($P < 0.05$). *Conclusion*: The staged nursing intervention for patients with cerebral infarction can improve their neurological function and limb motor function, and significantly enhance their quality of life.

Keywords: Staged nursing model; Cerebral hemorrhage; Neurological function; Limb motor function

1. Introduction

Cerebral hemorrhage is a common cerebrovascular disease with high incidence, high disability rate and high mortality rate in clinical practice. According to statistics, it accounts for approximately 10% to 15% of stroke cases. Clinically, hematoma evacuation or hematoma drainage are the common treatment methods, and some patients can achieve ideal therapeutic effects [1]. However, surgical operations carry significant risks. Postoperative sequelae such as neurological deficits and limb motor dysfunction often remain, presenting with various symptoms including hemiplegia, aphasia, and dysphagia. Among them, approximately 70% of patients have long-term and severe functional dependence, which not only affects their normal life but also increases the burden on family care and the economy. Given the disease characteristics and treatment needs of cerebral hemorrhage, how to promote

the postoperative functional recovery of patients through scientific nursing intervention is an urgent problem to be solved in neurosurgery at present [2]. Conventional care focuses on vital sign monitoring and complication prevention. Although it can ensure the safety of patients during treatment, it is not very effective in promoting the recovery of postoperative neurological function and limb motor function. The staged nursing model can make up for the deficiencies of conventional nursing. By dividing the nursing process into different stages, setting specific nursing goals for each stage, and implementing staged nursing intervention, it can not only prevent the occurrence of related complications but also further improve the recovery effect of neurological function and limb motor function [3]. Therefore, this article will explore the influence of staged nursing on neurological function and limb motor function after cerebral hemorrhage surgery. The report is as follows.

2. Materials and methods

2.1. General information

From April 2024 to August 2025, 68 in patients were selected as the research subjects, with 34 in each group. A control group consisting of 19 men and 15 women. The average age was (54.49 ± 4.28) years old, and the average age ranged from 37 to 78 years old. The observation group was composed of 20 men and 14 women. The average age was (55.09 ± 4.23) years old, ranging from 41 to 80 years old. There was no significant difference in the general data between the two groups of patients, $P > 0.05$.

Inclusion criteria: (1) Diagnosed with cerebral hemorrhage; (2) All undergo surgical operations; (3) Complete clinical data; (4) Sign the informed consent form for the surgery after guidance.

Exclusion criteria: (1) Those with contraindications to surgery; (2) Those who cannot cooperate actively; (3) Malignant tumor; (4) Severe organ failure.

2.2. Methods

2.2.1. Control group

Provide routine care. Assist patients in completing routine examinations before the operation and conduct a comprehensive assessment of their specific conditions. Explain the specific procedures, steps and precautions of the surgery to the patient orally to help them maintain a good psychological state before the operation. After the operation, closely monitor the changes in the patient's vital signs, record blood pressure, blood oxygen saturation, body temperature and other indicators on time. Report any abnormalities in a timely manner and assist the doctor in handling them. After the patient's condition has relatively stabilized, they can be appropriately guided to perform passive limb activities. As the condition improves, they can gradually transition to active activities to accelerate the recovery process.

2.2.2. Observation group

Adopt a phased care model.
  (1) Form a professional staged nursing team: Based on the characteristics of cerebral hemorrhage and the needs of patients, select some medical staff to form a professional nursing team. Discuss the key points of diagnosis, treatment and rehabilitation of cerebral hemorrhage, and formulate targeted staged nursing plans.
  (2) 1 to 7 days after the operation: Closely monitor the changes in intracranial pressure, cerebral perfusion pressure and vital signs of the patients after the operation. Use the GCS and NIHSS professional

assessment forms to dynamically evaluate the patient's neurological function of the patients and determine the postoperative recovery situation. Regularly check the patient's airway patency. Raise the head of the bed by 15° to 30°, assist the patient in tilting their head to one side, and use a professional suction device to remove residual secretions in the airway and oral cavity to keep the airway unobstructed and prevent aspiration pneumonia. Assist the patient in turning over every two hours, massage the compressed areas to promote local blood circulation, and at the same time passively flex the limbs to maintain joint flexibility and prevent pressure injuries and deep vein thrombosis of the lower extremities.

(3) One to four weeks after the operation: Conduct a comprehensive assessment of the patient's physical condition. Under the assistance of a rehabilitation doctor, guide the patient to perform bed bridge exercises to enhance the range of motion of the joints. Gradually transition from the semi-reclining position to the bedside sitting position and carry out static and dynamic sitting balance training. As the strength of the lower limbs recovers, practice the transfer techniques from lying to sitting and from sitting to standing to lay the foundation for standing training. The swallowing function was evaluated using the Wada drinking water test. For high-risk patients, speech therapists were assisted in formulating personalized training plans. Through methods such as ice stimulation and empty swallowing training, safe dietary guidance was provided simultaneously, and patients were encouraged to independently complete daily activities using the healthy side of their limbs.

(4) 1 to 3 months after the operation: Guide the patient to perform standing, center of gravity transfer and gait training with the help of a balance bar or a walking aid. On a daily basis, fine motor skills and coordination training are carried out through methods such as grasping, finger alignment, and picking up small objects. Assess the mental health status of patients, provide psychological counseling for those with negative emotions such as anxiety and depression, encourage family members to actively participate, offer emotional support and emotional comfort to patients, eliminate psychological pressure and negative emotions, and maintain a good mental state.

(5) Three months after the operation: Three months after the operation, a telephone follow-up was conducted to gain a detailed understanding of the patient's recovery of nerve and limb functions after the operation. Professional tools were used for assessment, and the rehabilitation training plan was adjusted to meet the patient's recovery needs.

2.3. Observation indicators

2.3.1. Neurological function and limb motor function scores

Neurological function and limb motor function scores were systematically scored using the NIHSS and Fugl-Meyer professional scales, respectively.

2.3.2. Quality of life score

The SF-36 was used to score the four aspects of physical, social, emotional and physiological.

2.4. Statistical analysis

Data was entered into SPSS22.0 statistical software for calculation. The measurement data conforming to the normal distribution are expressed as mean ± standard deviation (SD) and tested by t-test. Count data are expressed as $n(\%)$ and tested by χ^2. $P < 0.05$, and the comparison was statistically significant.

3. Results

3.1. Compare the scores of neurological function and limb motor function

When comparing the two groups, the improvement effects of neurological function and limb motor function in the observation group were more obvious ($P < 0.05$). Please refer to **Table 1** for details.

Table 1. Comparison of neurological function and limb motor function scores (mean ± SD, points)

Group	Number of cases	Neural function (NIHSS)		Neural function (FMA)	
		Before nursing	After nursing	Before nursing	After nursing
Observation Group	34	18.92 ± 4.15	11.02 ± 2.37	62.14 ± 7.08	79.68 ± 5.53
Control group	34	19.05 ± 4.21	15.72 ± 2.41	62.08 ± 7.12	73.63 ± 5.41
t	-	0.128	8.108	0.035	4.560
P	-	0.898	0.000	0.972	0.000

3.2. Compare the quality of life scores

The comparison between the two groups showed that the quality of life score of the observation group was significantly improved ($P < 0.05$). Please refer to **Table 2** for details.

Table 2. Comparison of quality of life scores (mean ± SD, points)

Group	Number of cases	Physical function		Social function		Emotional function		Physiological function	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Observation Group	34	62.23 ± 6.69	79.84 ± 4.24	65.75 ± 7.45	82.05 ± 6.31	92.94 ± 5.53	85.37 ± 4.29	61.41 ± 7.34	82.03 ± 4.01
Control group	34	62.19 ± 6.72	73.41 ± 4.09	65.81 ± 7.21	76.59 ± 6.08	92.85 ± 5.43	78.79 ± 4.03	62.05 ± 7.31	75.53 ± 3.36
t	-	0.025	6.364	0.034	3.633	0.068	6.518	0.360	7.245
P	-	0.981	0.000	0.973	0.001	0.946	0.000	0.720	0.000

4. Discussion

Cerebral hemorrhage refers to the bleeding caused by the rupture of blood vessels in the brain parenchyma without trauma. It is characterized by a sudden onset and rapid progression of the disease, posing a significant threat to the physical health and life safety of patients. Hypertensive cerebral hemorrhage is the main cause of this disease, accounting for approximately 70% to 80%. Additionally, abnormal structure of cerebral blood vessels and head trauma are also common causes of this disease [4,5]. Headache, vomiting, consciousness disorders, and elevated blood pressure are all common symptoms of cerebral hemorrhage, and surgical treatment is mostly adopted in clinical practice. The core goals of treating cerebral hemorrhage are to eliminate the hematoma, reduce intracranial pressure, relieve compression on brain tissue, and preserve neurological function. However, the surgical trauma is significant, and various complications such as infection and subcutaneous hematoma are highly likely to occur after the operation. At the same time, it also increases the risk of sequelae such as neurological function damage and limb motor dysfunction [6].

The staged nursing model is based on the development laws of diseases, the dynamic changes of patients' conditions or the process of rehabilitation. It divides the entire nursing process into several definite stages, and each stage has targeted nursing goals, contents and measures. Through the implementation of staged care for patients with cerebral hemorrhage, both their neurological function and limb motor function were significantly improved, and their quality of life was also significantly enhanced. There was a significant difference compared with the control group ($P < 0.05$). By analyzing the causes, the staged nursing model can divide the care into different time stages based on the characteristics of the disease and the needs of the patients. The period from 1 to 7 days after the operation belongs to the acute stage. Through posture care, early rehabilitation training, etc., complications such as joint contracture and muscle atrophy can be avoided, thereby providing conditions for subsequent rehabilitation training [7]. Stepped training is a process from passive bed activities to active standing and walking. Continuous and repetitive training of damaged nerves can promote the reconstruction of synaptic connections to the greatest extent. Compared with conventional care, the staged care model encourages family members to actively participate in the care process, which can provide emotional support for patients, help stabilize their emotions, maintain a good psychological state, and thus actively cooperate with the treatment [8].

5. Conclusion

In conclusion, implementing staged care for patients with cerebral hemorrhage can significantly improve the irneurological function and limb motor function, and has a remarkable nursing effect on their quality of life.

Disclosure statement

The author declares no conflict of interest.

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