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Application Effect of Early Rehabilitation Nursing in Elderly Cerebral Infarction Patients with Dysphagia

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Abstract: *Objective*: To observe the application effect of early rehabilitation nursing in elderly cerebral infarction patients with dysphagia. *Methods*: 120 cases of elderly cerebral infarction patients with dysphagia were divided into 60 cases in the control group and 60 cases in the observation group by the double-blind method, and conventional nursing and early rehabilitation nursing were implemented respectively. Swallowing function, quality of life, adverse events, and nursing satisfaction were compared before and after nursing care. *Results*: After nursing, the swallowing function score of the observation group (1.01 ± 0.18 points) was lower than that of the control group, and the quality of life score (160.63 ± 9.95 points) was higher than that of the control group ($P < 0.05$); the incidence rates of aspiration and aspiration pneumonia in the observation group (5.00% and 3.33%) were lower than that of the control group ($P < 0.05$); the total nursing satisfaction of the observation group (98.33%) was higher than that of the control group ($P < 0.05$). *Conclusion*: Early rehabilitation nursing can reduce the degree of dysphagia in elderly patients with cerebral infarction, reduce the incidents of aspiration and aspiration pneumonia, and improve the quality of life, with high nursing satisfaction.

Keywords: Cerebral infarction; Dysphagia; Early rehabilitation nursing; Application effect

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1. Introduction

Cerebral infarction is a type of cerebrovascular accident that is common among middle-aged and elderly individuals. It has a high incidence rate, disability rate, recurrence rate, and mortality rate. Cerebral infarction can lead to many complications, such as dysphagia, which is mainly manifested as the obstruction of the process of transferring food from the mouth to the stomach, making it impossible to eat safely and efficiently, or even unable to eat through the mouth, thus affecting the supplementation and absorption of nutrients. After a cerebral infarction, dysphagia is caused by damage to the central nervous system responsible for swallowing, and dysphagia will appear immediately, with an incidence between 20% and 70% in cerebral infarction patients [1]. The severity of dysphagia is related to the location and extent of the nerve center lesion. Milder cases may experience choking and coughing when drinking water, while more severe cases can lead to malnutrition [2], which se-

riously affects the quality of life and even jeopardizes patients' lives. Therefore, timely and effective rehabilitation nursing is necessary and important. This paper aims to analyze the application effect of early rehabilitation nursing in elderly cerebral infarction patients with dysphagia.

2. General information and methods

2.1. General information

120 cases of elderly cerebral infarction patients with dysphagia admitted from November 2021 to November 2023 were selected to be the subjects of this study. Using the double-blind method, they were divided into two groups, each group with 60 cases. In the control group, there were 39 men and 21 women, aged 60–78 (69.15 ± 3.35) years, and the duration of the disease ranged from 1 to 9 (5.15 ± 1.16) days. In the observation group, there were 37 males and 23 females, aged 61–79 (69.21 ± 3.17) years, and the disease duration was 1–8 (5.22 ± 1.11) days. The data of the two groups were comparable, $P > 0.05$.

2.2. Inclusion and exclusion criteria

Inclusion criteria: (1) patients meeting the clinical diagnostic criteria of cerebral infarction, and age ≥ 60 years; (2) the results of water swallow test ≥ grade 2; (3) able to maintain a sitting position for more than 0.5 hours; (4) stable vital signs at the time of enrollment; (5) able to cooperate with the survey of various scales; and (6) complete general information.

Exclusion criteria: (1) swallowing disorders due to other diseases, such as Parkinson's, laryngeal cancer surgery, esophageal cancer surgery, etc.; (2) comorbid depression or the presence of a history of psychiatric disorders; (3) the presence of cognitive and speech disorders.

2.3. Methods

Routine nursing was provided in the control group, including routinely monitoring each patient's vital signs, giving verbal education, regularly assessing lesions, etc.

In the observation group, early rehabilitation nursing was provided.

(1) Psychological rehabilitation nursing: Through communication, nurses assessed patients' psychological status, understood their views and attitudes towards the disease, explained the causes of the disease, basic symptoms, and clinical intervention methods in easy-to-understand sentences, patiently listened to patients' inner concerns and confusions, skillfully used psychological methods to ease the patients' negative emotions, provided sufficient care, encouragement, support, and a sense of security, suggested that the patients regulate their physical and mental status with the help of music, etc., and emphasized the importance of family accompaniment.

(2) Feeding function training: Nurses kept the patient supine, raised the head of the bed by 30°, slowly adjusted the angle to 60° according to the patient's condition, and instructed the patient to stretch his head forward. To avoid food leakage during feeding and prevent accidental swallowing, in the early stage of rehabilitation, nurses selected foods that were sticky, easy to move in the mouth, and difficult to disperse. Once the patient could ingest these foods normally, they then progressed to pasty foods. The amount of food should be from less to more and should be controlled at about 2–3 ml per day, and then slowly increased. Nurses paid attention to the observation of swallowing and instructed the patients to swallow several times in the process of eating, to swallow all the food before taking the next mouthful, and to drink water appropriately to clean up the residual food in the pharynx after swallowing.

(3) Swallowing function training: Nurses evaluated patients' tolerance levels, conducted exercises for mas-

ticatory muscles and tongue muscles, and provided regular massages. Before meals, they performed mouth-opening training for ten minutes each session, including tongue extension and rotation exercises to enhance tongue muscle flexibility. In cases where the tongue could not rotate freely, nurses assisted by wrapping clean gauze around it to facilitate movement. In addition, Nurses instructed patients to exercise their chewing and buccal muscles twice daily, using clean gauze to aid with puffing and biting movements. Additionally, they engaged in exercises targeting internal laryngeal muscles, incorporating breathing techniques like exhalation and inhalation, as well as mouth opening and closure. These exercises were performed once daily, both in the morning and evening, each session lasting ten minutes. To stimulate swallowing function, patients received stimulation at the base of the tongue and soft palate using frozen swabs, administered three times daily.

2.4. Observation indexes

(1) The swallowing function and quality of life before and after nursing were compared. Using Kubota's water swallow test [3], patients sat down and drank 30 ml of warm boiled water, the swallowing situation was observed; swallowing smoothly at one time: 1 point; swallowing several times without choking: 2 points; swallowing at one time with a choking cough: 3 points; swallowing several times with a choking cough: 4 points; unable to swallow with repeated choking: 5 points. Quality of life was assessed by applying the Swallowing-Related Quality of Survival Scale [4], with 11 dimensions, including 44 entries, and implementing the Likert 5-point scale, with a total score of 44–220, and higher scores indicated higher quality of life.

(2) The occurrence of adverse events in the two groups was recorded, including aspiration and aspiration pneumonia.

(3) Nursing satisfaction in the two groups was compared. A self-made nursing satisfaction questionnaire was used, which was categorized as very satisfied, relatively satisfied, generally satisfied, less satisfied, and total satisfaction = 100% – less satisfied.

2.5. Statistical methods

The data were analyzed by SPSS version 25.0 statistical software. The measurement data conformed to normal distribution were expressed by mean ± standard deviation (SD) and *t*-test, and [n (%)] indicated the count data, χ^2 test. $P < 0.05$ indicated a statistically significant difference.

3. Results

3.1. Swallowing function and quality of life

As shown in **Table 1**, the difference between the swallowing function and quality of life scores of the two groups of patients before nursing care was not significant, $P > 0.05$; after nursing care, the swallowing function score of the observation group was lower than that of the control group, and the quality of life score was higher than that of the control group, $P < 0.05$.

Table 1. Swallowing function and quality of life scores (mean ± SD, points)

Group	Cases (*n*)	Swallowing function		Quality of life	
		Pre-nursing	Post-nursing	Pre-nursing	Post-nursing
Control group	60	3.71 ± 0.53	2.16 ± 0.20	93.65 ± 10.18	131.45 ± 8.48
Observation group	60	3.68 ± 0.49	1.01 ± 0.18	93.47 ± 11.64	160.63 ± 9.95
t	-	0.322	33.106	0.090	17.289
P	-	0.748	0.000	0.928	0.000

3.2. Adverse events

As shown in **Table 2**, the incidence of aspiration and aspiration pneumonia in the observation group was lower than that in the control group, $P < 0.05$.

Table 2. Adverse events [*n* (%)]

Group	Cases (*n*)	Aspiration	Aspiration pneumonia
Control group	60	10 (16.67)	8 (13.33)
Observation group	60	3 (5.00)	2 (3.33)
χ^2	-	4.227	3.927
P	-	0.040	0.048

3.3. Nursing satisfaction

As shown in **Table 3**, the total nursing satisfaction level of patients in the observation group was higher than that of the control group, $P < 0.05$.

Table 3. Nursing satisfaction [*n* (%)]

Group	Cases (*n*)	Very satisfied	Relatively satisfied	Generally satisfied	Less satisfied	Total satisfaction
Control group	60	19 (31.67)	11 (18.33)	20 (33.33)	10 (16.67)	50 (83.33)
Observation group	60	28 (46.67)	17 (28.33)	14 (23.33)	1 (1.67)	59 (98.33)
χ^2	-	-	-	-	-	8.107
P	-	-	-	-	-	0.004

4. Discussion

Swallowing is a normal physiological process in human beings, which requires the oropharyngeal and laryngeal muscles to coordinate their movements with each other. Swallowing disorder after cerebral infarction is one of the common sequelae, which damages nerve centers that coordinate swallowing-related muscles and subsequently affects the basic ability to eat and drink water [5]. The restoration of the swallowing function of patients with cerebral infarction not only satisfies the basic physiological functions but also reduces complications such as aspiration pneumonia, improves the quality of life, and reduces the risk of disability and death. The swallowing function can be improved by strengthening the training of sensation and coordination of the oral cavity and pharynx as well as facial muscles [6], the plasticity and functional reorganization of the central nervous system after cerebral infarction is strong [7], and early rehabilitation care can actively improve the relevant functions

and promote the recovery of the corresponding functions through repeated training.

Conventional nursing intervention is relatively simple and lacks targeted systematic intervention, and the nursing effect is general. Early rehabilitation nursing is based on psychological care, to help patients master more knowledge of the disease, reduce psychological stress, decrease external interference factors, help emotional stability, and provide enough care, encouragement, and support, to help patients establish confidence in recovery and mobilize the subjective initiative [8,9]. The training of ingestive function is strengthened by starting with viscous foods, gradually transitioning to pasty foods, and increasing the food amount from small to large. Attention is paid to monitoring the swallowing situation to ensure that the diet remains reasonable. After each swallow, appropriate water is consumed to help clean up food residue, which can assist in maintaining oral hygiene and reducing the rate of infection [10]. The implementation of swallowing function training can improve the swallowing function, enhance the sensitivity of the tongue muscle, prevent the occurrence of wasting atrophy of the hypopharyngeal muscle group, enhance the sensitivity of the swallowing reflex, strengthen the stimulation of the root of the tongue and the soft palate, etc., and slowly restore the ability to swallow [11].

This study implemented early rehabilitation nursing for 60 patients in the observation group, and the results showed that the swallowing function score of the observation group was lower than that of the control group after nursing, indicating that the patients' swallowing ability was stronger after nursing, and the swallowing function could be gradually restored through early rehabilitation nursing and targeted training of various muscle groups. Comparing the adverse events of the two groups, the incidence of aspiration and aspiration pneumonia was lower in the observation group, and the risk of aspiration in patients with swallowing disorders after cerebral infarction is around 22–52%, and the risk of developing aspiration pneumonia is 11 times higher than that of patients without aspiration [12]. If the adverse events are severe, death due to asphyxia in the acute phase and malnutrition in the chronic phase may occur, affecting physical rehabilitation. Aspiration and aspiration pneumonia can be actively prevented by doing continuous swallowing function training through early rehabilitative care. After cerebral infarction, swallowing disorder occurs due to impaired normal swallowing function and patients cannot eat or drink normally, which will have a great impact on the quality of life, and even the loss of social roles and functions. The results showed that the quality of life score of patients in the observation group after nursing was higher than that of the control group, which can be seen as early rehabilitation nursing improved the quality of life by enhancing the patients' swallowing function. Comparing the nursing satisfaction of the two groups, 98.33% in the observation group was higher than the control group, indicating that early rehabilitation nursing can benefit patients.

5. Conclusion

In conclusion, early rehabilitation nursing emphasizes psychological care, improves patients' psychological state, focuses on ingestive function training, realizes the physiological needs of feeding via mouth as early as possible, chooses appropriate foods, applies techniques to reduce eating accidents, reduces eating anxiety and fear [13], improves the behavior of refusing social interaction due to eating difficulties or prolonged meal times, etc. It also gradually recovers patients' swallowing function, meets their physiological needs, strengthens their confidence in rehabilitation, encourages them to take the initiative to participate in rehabilitation training, and improves their fatigue state. Therefore, it can be seen that early rehabilitation nursing in elderly cerebral infarction patients with dysphagia has a more ideal and satisfactory effect.

Disclosure statement

The authors declare no conflict of interest.

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