

Review Article

Rehabilitation nursing combined with Xingnaojing can improve intracranial blood flow velocity and cerebrovascular endothelial function in patients with acute stroke

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Abstract: Objective: This study set out to explore the application value of rehabilitation nursing combined with xingnaojing in patients with acute stroke. Methods: A total of 142 patients with acute stroke from March 2018 to August 2019 in our hospital were selected as the research subjects. Patients in the control group (CG) (n=62) received conventional nursing combined with xingnaojing, while those in the research group (RG) (n=80) received rehabilitation nursing combined with xingnaojing. The levels of serum inflammatory factors in the two groups before and after nursing was detected by ELISA. Athletic ability of patients before and after nursing was assessed by Berg balance scale (BBS) and lower limb motor function rating scale (FMA). The degree of neurological deficiencies were evaluated by the neurological functional deficit scale (NIHSS). The indices of intracranial blood flow velocity before and after nursing were measured by color Doppler DC-60S, and the indices of cerebrovascular endothelial function before and after nursing were tested via ELISA. The adverse reactions of both groups were observed and recorded. Nursing satisfaction was evaluated via the self-designed questionnaire of nursing satisfaction of our hospital. The quality of life of both groups was assessed according to the quality of life questionnaires (QLQ-C30). Results: The level of inflammatory factors in the RG was significantly lower than that in the CG. the scores of BBS and FMA in the RG were dramatically higher than those in the CG, The NIHSS score of the RG was markedly lower than that of the CG. The indices of intracranial blood flow velocity in the RG were dramatically higher than those in the CG. The improvement of cerebrovascular endothelial function in the RG was significantly better than that in the CG. The adverse events in the RG were remarkably less than those in the CG. The nursing satisfaction of the RG was significantly higher than that of the CG. The quality of life scores of patients in the RG after nursing intervention were clearly higher than those in the CG. Conclusion: Rehabilitation nursing combined with xingnaojing can provide better care for patients with acute stroke, improve intracranial blood flow velocity and cerebrovascular endothelial function, and can be popularized in clinical practice.

Keywords: Rehabilitation nursing, xingnaojing, acute stroke, blood flow velocity, vascular endothelial function

Introduction

Stroke is one of the main causes of disability in adults. Clinical data show that stroke causes about 6 million deaths every year, while acute stroke accounts for 80% of all strokes. It is caused by thrombosis or occlusion of cerebral arteries by embolism. The pathophysiological process is extremely complex, involving failure of biological function, acidosis or white blood cell infiltration and destruction of the blood-brain barrier [1, 2]. Tissue plasminogen activa-

tor, intravenous drugs and intravascular therapy are commonly used in clinical treatment of acute stroke [3]. However, few acute stroke patients receive thrombolysis. This study adopted xingnaojing injection to treat acute stroke patients [4]. Xingnaojing can clean thermal toxicity, promote blood flow, effectively improve brain function and reduce inflammatory level markers in serum [5]. Although drug therapy or other treatments can effectively reduce the mortality and recurrence rates of acute stroke, relevant studies show that nursing intervention

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can effectively improve the prognosis of patients during treatment [6].

Clinical research shows that high-quality nursing intervention for patients with acute stroke can improve their enthusiasm, reduce anxiety and depression, and has better application value in shortening the course of disease [7]. However, the conventional clinical nursing mode cannot meet the needs of patients [8]. Research shows that the conventional nursing mode often lacks the nursing competency for treating acute stroke, which leads to treatment measures not being well utilized, thus leading to poor patient prognosis [9]. Rehabilitation nursing introduced in this study is patient-centered, and it is an evidence-based intervention and its interdisciplinary team cooperation have been clinically considered as the key to neurological rehabilitation nursing. Its nursing mode includes the individual uniqueness of patients and their families and provides the greatest potential to support them [10]. For example, research shows that rehabilitation nursing intervention can improve the comprehensive health status of patients with hand burns [11]; other studies show that rehabilitation nursing intervention can improve the prognosis and physical rehabilitation degree of stroke patients [12].

Previous studies have rarely studied the efficacy and prognosis of rehabilitation nursing combined with xingnaojing treatment for acute stroke patients. This study will explore the application value of the combination of the two for acute stroke patients, aiming to provide feasible nursing intervention measures for those treated by xingnaojing.

Data and methods

General information

A total of 142 patients with acute stroke in the Second Affiliated Hospital of Hainan Medical University from March 2018 to August 2019 were selected as the research subjects. There were two groups according to different nursing methods. The RG (80) included 44 males and 36 females, with an average age of (64.11 ± 3.11) years, and the CG (62) included 28 males and 34 females, with an average age of (65.03 ± 4.28) years. This study was approved by the ethics committee of the Second Affiliated

Hospital of Hainan Medical University, and the subjects and their families were informed and they signed a fully informed consent form. Inclusion criteria: Both groups of patients were diagnosed with acute stroke by emergency brain CT scan [13]; all of them had their first onset; all of them were acute stroke patients who were sent to our hospital within 24 h after onset; all of them had no mental disease, with clear consciousness, and they could communicate with others; NIHSS score ≥ 5 and ≤ 20 , age ≥ 35 and ≤ 80 years; the expected survival time was ≥ 1 month. Exclusion criteria: Patients were allergic to the drugs used in this study; patients suffered from brain malignant tumors; patients could not actively cooperate with this researcher; patients quit the experiment midway; patients had intracranial infection; patients were lost to follow up.

Nursing methods

Patients in both groups were given conventional treatment such as reducing intracranial pressure, maintaining water and electrolytes, controlling cerebral edema and oxygen inhalation, while those with hypertension and diabetes were given basic treatment such as dilating coronary artery blood vessels and controlling blood glucose. In addition to basic treatment, 20 mL of xingnaojing injection was intravenously administered in 250 mL normal saline (1 d/time). There were two consecutive courses of treatment, 14 days was a course of treatment.

The patients in the CG were given conventional nursing combined with xingnaojing. They were given simple safety education, and were told to stay in bed during the treatment and how to prevent the occurrence of complications. Patients and their families were told to patrol the ward regularly to prevent the occurrence of adverse events such as bed falling and injuries.

Those in the RG used rehabilitation nursing combined with xingnaojing. (1) Psychological guidance: We gave patients a quiet and comfortable hospital environment, understood their mood fluctuations, and gave correct psychological treatment according to the psychological state of each of them as well as spiritual encouragement and support. While giving psychological guidance, we informed them of the importance of a good psychological state

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for disease rehabilitation, guided them to overcome psychological barriers and to actively cooperate with nursing intervention, and encouraged family members to actively participate in the treatment. (2) Cognitive function rehabilitation training: We arranged professional nursing staff to introduce the basic knowledge of the causes, clinical manifestations, pathogenesis, and complications caused by the disease and treatment methods of acute stroke to each patient and family members, improved their awareness of the disease, guided them to bravely face the disease and actively participate in the treatment and nursing. (3) Functional rehabilitation training: The nursing staff gave the rehabilitation training according to the condition of each patient. Instruction on diet and swallowing function: The nursing staff instructed patients to eat correctly and keep a light diet. They informed patients to eat in a semi-lying or sitting position and keep semi-liquid diets in most cases. They also guided patients to carry out breathing training, and prevented them from aspiration, asphyxia, etc. Upper limb function training: They invited patients to carry out moderate upper limb training, such as grasping sticks, washing and twisting towels, but not difficult movements. According to the patients' recovery, they actively encouraged them to bend their knee joints, toe joints and hip joint in bed, and the activities could be increased slowly. After they were able to stand, they could begin standing balance training. (4) Prevention of adverse events: The nursing staff carefully observed the living habits and personality of patients, aimed to prevent any possible adverse events, and took first-aid measures in due time to reduce any adverse consequences of adverse events. (5) Guidance of family and life activities: The nursing staff advised the patients' family members to establish good family and social system support through communication, so that they could feel the close relationship between family and society to adjust their psychological state and better promote physical recovery.

Outcome measures

(1) Serum inflammatory factor hypersensitive C-reactive protein (hs-CRP), tumor necrosis factor- α (TNF- α), P-selectin (PS), interleukin-6 (IL-6) and interleukin-8 (IL-8) were measured by enzyme-linked immunosorbent assay (ELI-

SA). We strictly followed the instructions of human hs-CRP ELISA, human TNF- α ELISA, human PS ELISA, human IL-6 ELISA and human IL-8 ELISA kits (Hengfei Biotechnology Co., Ltd., Shanghai, China, CSB-E100435mo-1, 130-110-101, 130-107-469, K001607P, K00018M).

(2) Two scoring methods were adopted for analyzing the motor function of patients in the two groups: Berg balance scale (BBS), with a total score of 56 points from 14 items. The scoring standard: 0-20 points indicated that patients had poor balance ability and could only use a wheelchair instead of walking; from 21 to 40, patients had average balance ability and could walk with the help of nursing staff; from 41 to 56, patients could walk independently. The higher the BBS score was, the better the balance was. We employed a lower limb motor function rating scale (FMA), and the rating score was evaluated from three items (supine position, sitting position and standing position). The total score of the scale was 34 points, and a higher score indicated a better recovery of lower limb function of the patient.

(3) The degrees of neurological deficiency of patients were measured by NIHSS: the scale had 15 items, with a total score of 42. The lower the score was, the better the recovery of neurological function after nursing intervention was.

(4) Mindray desktop color Doppler DC-60S was used to detect the intracranial blood flow velocity index level of patients in the two groups before and after nursing.

(5) Cerebrovascular endothelial function index: The expression level of von Willebrand factor (vWF) (Hengfei Biotechnology Co., Ltd., Shanghai, China, bs-10048R-2) in the serum of patients in both groups before and after nursing was detected by ELISA. The expression level of endothelin-1 (ET-1) (Hengfei Biotechnology Co., Ltd., Shanghai, China, E7920) was detected via enzyme-linked immunosorbent assay, as well as the expression level of serum endothelial NO synthase (eNOS) (Yiji Shiye Co., Ltd., Shanghai, China, GX6569094).

(6) The adverse reactions in the nursing process of patients in the two groups were observed.

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(7) The patients were scored with a self-made "nursing satisfaction questionnaire" of our hospital, and the scoring content totaled 20 items. They were scored based on the nursing content of our hospital. Each item had 5 points, a total score of less than 70 points was unsatisfactory, 70-89 points was as satisfactory, and ≥ 90 points was very satisfactory. Satisfaction = (Very Satisfied + Satisfied)/Total Cases $\times 100\%$.

(8) The quality of life of patients in both groups was evaluated by Quality of Life Questionnaire Core 30 (QLQ-C30), which included somatic function, cognitive function, emotional function, role function and social function. Each item had 100 points. The higher the score was, the better the quality of life was.

Statistical methods

SPSS 20.0 (IBM Corp, Armonk, NY, USA) was used for statistical analysis, and GraphPad Prism 7 was used to illustrate the data. The counting data were expressed by [n (%)] and those between groups were compared with Chi-square test. When the theoretical frequency in Chi-square test was less than 5, and Chi-square test was used for continuity correction. The measurement data were expressed by mean \pm standard deviation ($\bar{x} \pm sd$), and those between groups were compared with independent-samples t test, and the comparison before and after the group adopted paired t test. The difference was statistically significant when $P < 0.05$.

Results

General information

There was no remarkable difference between the two groups in general clinical baseline data such as gender, age, body mass index (BMI), occupation, place of residence, nationality, onset time, religious belief, education background, infarct site, disease degree, drinking history, and hypertension history, etc. ($P > 0.05$) (**Table 1**).

Comparison of inflammatory factor levels before and after nursing of patients between the two groups

There was no difference in the levels of hs-CRP, TNF- α , PS, IL-6, IL-8 and other inflammatory

factors between the two groups before nursing ($P > 0.05$). While the levels of inflammatory factors after nursing decreased significantly. The inflammatory factor levels after nursing in the RG were significantly lower than those in the CG, with statistical significance ($P < 0.05$) (**Table 2**).

Athletic ability (BBS, FMA) scores of patients in the two groups

The BBS score and FMA score of patients in both groups were evaluated and were found to have no difference before nursing ($P > 0.05$). While the two scores were statistically different after nursing intervention and were found to be significantly higher in the RG than in the CG ($P < 0.05$) (**Figure 1**).

Neurological functional deficit scale (NIHSS) of patients in the two groups

There was no marked difference in the NIHSS scores before nursing between the two groups ($P > 0.05$). While NIHSS scores after nursing intervention showed that the RG was statistical lower than the CG ($P < 0.05$) (**Figure 2**).

Intracranial blood flow velocity index levels before and after nursing of patients in the two groups

There was no marked difference in the intracranial blood flow velocity indices of anterior cerebral artery, middle cerebral artery, posterior cerebral artery, vertebral artery and base artery before nursing between the two groups ($P > 0.05$). After nursing, intracranial blood flow velocity indices of patients in both groups increased remarkably, and the RG was dramatically higher than the CG ($P < 0.05$) (**Table 3**).

Cerebral vascular endothelial function indices before and after nursing of patients in the two groups

There was no remarkable difference in the ET-1, vWF and eNOS cerebrovascular endothelial function indexes between the two patients before nursing ($P > 0.05$). While the cerebrovascular endothelial function indices between them after nursing were significantly improved. For example, the ET-1 and vWF indices in the RG after nursing were clearly lower than those

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Table 1. Comparison of general data between patients of the two groups [n (%)] (x ± sd)

Classification	Research group (RG) (n=80)	Control group (CG) (n=62)	t/ χ^2 value	P value
Gender			1.353	0.245
Male	44 (55.00)	28 (45.16)		
Female	36 (45.00)	34 (54.84)		
Age (years)	64.11±3.11	65.03±4.28	1.385	0.168
BMI (kg/m ²)	20.35±1.58	20.12±1.07	0.984	0.326
Occupation			1.723	0.422
Those are on the job	22 (27.50)	19 (30.65)		
Those are retire	31 (38.75)	15 (24.19)		
Those are unemployed	27 (33.75)	18 (24.19)		
Place of residence			0.236	0.626
Cities and towns	42 (52.50)	30 (48.39)		
Countryside	38 (47.50)	32 (51.61)		
Nationality			1.719	0.189
Han	45 (56.25)	28 (45.16)		
Ethnic minorities	35 (43.75)	34 (54.84)		
Time of onset (h)	10.42±2.25	9.87±2.23		
Religious belief			1.864	0.172
Yes	22 (27.50)	11 (17.74)		
No	58 (72.50)	51 (82.26)		
Education			2.672	0.102
High school or higher	38 (47.50)	21 (33.87)		
< High school	42 (52.50)	41 (66.13)		
Infarct site			1.427	0.232
Anterior circulation	45 (56.25)	41 (66.13)		
Posterior circulation	35 (43.75)	21 (33.87)		
Pathogenetic condition			1.680	0.431
Light	15 (18.75)	17 (27.42)		
Moderate	33 (41.25)	21 (33.97)		
Heavy	32 (40.00)	24 (38.71)		
History of drinking			0.024	0.876
Yes	48 (60.00)	38 (61.29)		
No	32 (40.00)	24 (38.71)		
History of hypertension			0.299	0.584
Yes	52 (65.00)	43 (69.35)		
No	28 (35.00)	19 (30.65)		

in the CG, and the eNOS indices were clearly higher than those in the CG ($P < 0.05$) (**Table 4**).

Incidence of adverse events in the nursing and treatment process of patients in the two groups

After observation, we found that adverse events such as fever, rash, mild liver dysfunction and falling from bed occurred in patients of the two groups during the nursing process. The

total incidence of adverse events in the RG was 3.75%, while that in the CG was 20.97%. The results showed that the adverse events during nursing intervention in the RG were significantly less than those in the CG ($P < 0.05$) (**Table 5**).

Nursing satisfaction of patients in the two groups

The nursing satisfaction of the patients in the RG was 95.00% and that of the CG was 74.19%,

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Table 2. Comparison of inflammatory factor levels of patients between the two groups ($x \pm sd$)

Group	n	hs-CRP (mg/L)		TNF- α (ng/L)		PS (ng/L)		IL-6 (ng/L)		IL-8 (ng/L)	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Research group	80	6.35 \pm 2.21	2.57 \pm 1.03	32.52 \pm 5.24	9.32 \pm 2.25	13.22 \pm 1.78	8.63 \pm 1.17	96.8 \pm 10.32	42.33 \pm 6.34	18.92 \pm 4.81	2.18 \pm 0.23
Control group (CG)	62	6.32 \pm 2.53	3.38 \pm 1.21	33.05 \pm 5.18	16.35 \pm 2.28	13.26 \pm 1.73	10.83 \pm 1.22	97.3 \pm 10.73	55.67 \pm 6.38	18.79 \pm 4.79	6.19 \pm 1.84
t	-	0.075	4.305	0.601	18.360	0.134	10.910	0.281	12.400	0.160	19.320
P	-	0.940	<0.001	0.549	<0.001	0.893	<0.001	0.778	<0.001	0.873	<0.001

Table 3. Comparison of intracranial blood flow velocity indices of patients between the two groups ($x \pm sd$)

Group	n	Anterior cerebral artery		Middle cerebral artery		Posterior cerebral artery		Vertebral artery		Base artery	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Research group	80	39.21 \pm 4.78	45.16 \pm 5.02	38.23 \pm 4.45	44.15 \pm 5.05	37.2 \pm 4.78	43.15 \pm 5.09	27.23 \pm 3.45	39.13 \pm 4.13	26.14 \pm 3.23	36.18 \pm 4.33
Control group (CG)	62	39.37 \pm 4.76	41.32 \pm 5.03	38.39 \pm 4.42	40.21 \pm 5.07	37.39 \pm 4.75	39.32 \pm 4.78	27.38 \pm 3.38	33.35 \pm 4.12	26.29 \pm 3.21	33.22 \pm 4.28
t	-	0.198	4.517	0.213	4.603	0.235	4.566	0.259	8.280	0.275	4.507
P	-	0.843	<0.001	0.832	<0.001	0.814	<0.001	0.796	<0.001	0.783	<0.001

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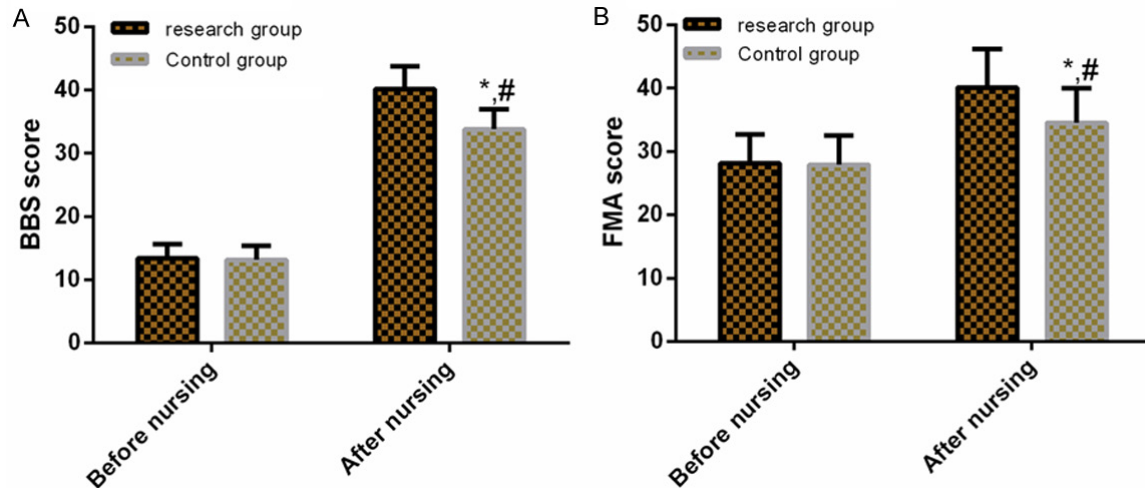


Figure 1. Athletic ability (BBS, FMA) scores of patients in the two groups. There was no difference in the BBS and FMA scores before nursing. The two scores after nursing in the RG were higher than those in the CG ($P < 0.05$). Note: comparison with before nursing ($*P < 0.05$); comparison with control group after nursing ($\#P < 0.05$).

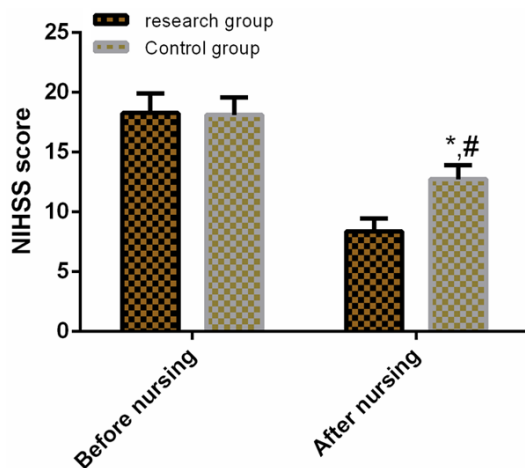


Figure 2. Neurological functional deficit scale (NIHSS) of patients in the two groups. There was no difference in the NIHSS scores before nursing, but the scores in the RG was lower than that in the CG ($P < 0.05$). Note: comparison with before nursing ($*P < 0.05$); comparison with control group after nursing ($\#P < 0.05$).

and the nursing satisfaction of the RG was significantly higher than that of the CG ($P < 0.05$). (Table 6).

Quality of life of patients in the two groups after nursing

After evaluation, we found that the quality of life scores of patients in the RG after nursing intervention were dramatically higher than those in the CG ($P < 0.05$). (Table 7).

Discussion

Stroke is one of the major causes of disability and death in high-income and developing countries [14]. Post-stroke infection occurs in 30% of acute stroke patients and is related to their poor prognosis [15]. Other studies have shown that acute stroke often leads to cognitive dysfunction of patients, which is relevant to the reduction of quality of life and one of the causes of poor psychological state [16].

In this study, we employed rehabilitation nursing to carry out nursing intervention on acute stroke patients treated by xingnaojing, and found that their condition clearly improved after nursing intervention. Some studies have shown that the increase of serum inflammatory factors, damage of the nervous system and lack of exercise are risk factors for acute stroke. Therefore, effective prevention of these factors is vital for the treatment and good prognosis of patients [17, 18]. This study observed the levels of inflammatory factors of patients in the two groups before and after nursing. It was found that the levels of hs-CRP, TNF- α , PS, IL-6 and IL-8 in the RG were lower than those in the CG after nursing intervention. This illustrated that rehabilitation nursing has better management and care for acute stroke patients treated by xingnaojing, and can improve their levels of inflammatory factors over conventional nursing. The BBS score and FMA score in the mo-

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Table 4. Comparison of cerebral vascular endothelial function indices between patients in the two groups ($x \pm sd$)

Group	n	ET-1 (pg/ml)		vWF (%)		eNOS ($\mu\text{g/L}$)	
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Research group (RG)	80	95.23 \pm 8.55	64.51 \pm 5.44	182.56 \pm 10.09	102.31 \pm 8.79	17.33 \pm 3.34	29.28 \pm 4.09
Control group (CG)	62	93.89 \pm 8.52	75.23 \pm 5.87	177.63 \pm 10.12	134.69 \pm 9.55	17.21 \pm 3.31	20.67 \pm 3.88
t	-	0.927	11.250	2.884	20.960	0.213	12.720
P	-	0.355	<0.001	0.005	<0.001	0.831	<0.001

Table 5. Incidence of adverse nursing events of patients in the two groups [n (%)]

Group	n	Fever	Rash	Mild liver dysfunction	Falling bed	Total incidence
Research group (RG)	80	1 (1.25)	1 (1.25)	1 (1.25)	0 (0.00)	3 (3.75)
Control group (CG)	62	5 (8.06)	3 (4.84)	2 (3.23)	3 (4.84)	13 (20.97)
χ^2 value	-	4.008	1.643	0.659	3.955	10.361
P value	-	0.045	0.199	0.461	0.046	0.001

Table 6. Comparison of nursing satisfaction between patients in the two groups [n (%)]

Group	n	Satisfied	More satisfied	Dissatisfied	Satisfaction (%)
Research group (RG)	80	53 (66.25)	23 (30.65)	4 (5.00)	76 (95.00)
Control group (CG)	62	19 (23.75)	27 (43.55)	16 (25.81)	46 (74.19)
t	-	-	-	-	12.501
P	-	-	-	-	0.001

Table 7. Comparison of quality of life scores of patients in the two groups after nursing ($x \pm sd$)

Scores of quality of life	Research group (RG) (n=80)	Control group (CG) (n=62)	t value	P value
Quality of life	76.13 \pm 5.02	65.12 \pm 3.26	14.990	<0.001
Somatic function	71.87 \pm 5.14	61.21 \pm 4.13	13.330	<0.001
Emotional function	75.62 \pm 6.11	61.89 \pm 4.06	15.270	<0.001
Role function	77.33 \pm 7.18	61.12 \pm 6.15	14.190	<0.001
Social function	78.94 \pm 8.03	64.73 \pm 6.35	11.430	<0.001

tor function of patients in both groups were observed, and it was found that the motor function recovery of those in the RG was dramatically higher than that in the CG, which indicated that the limb rehabilitation training can effectively improve their recovery of limb function. Some studies show that [19], NIHSS scale which is clinically used to assess the degree of neurological deficiency in patients with acute stroke, is an effective tool to predict their efficacy. This study found that the NIHSS score of patients in the RG after nursing treatment was significantly lower than that in the CG, which indicated that rehabilitation nursing intervention for patients with acute stroke could effec-

tively improve their neurological function.

Some studies have shown that intracranial blood flow velocity in patients with acute stroke will be significantly reduced, and the reduction of these indicators will lead to complications. It is also been shown that increased intracranial blood flow velocity is tied to poor prognosis [20]. However, this study found that the indices of intracranial blood flow velocity of the patients in the RG after rehabilitation nursing intervention were significantly higher than those in the CG, such as anterior cerebral artery, middle cerebral artery, posterior cerebral artery, vertebral artery, base artery, etc., indicating that rehabilitation nursing combined with xingnaojing could more effectively improve intracranial blood flow dynamics of patients, restore damaged brain regions and improve intracranial blood flow velocity. We have observed the cerebrovascular endothelial function indices of both patients. Research shows that high expression of ET-1 and vWF can have

harmful effects on the water dynamic balance, blood brain barrier and cerebral edema integrity of patients with acute stroke, and will lead to more severe ischemic brain injury [21, 22]. Other studies have shown that eNOS can catalyze NO to expand blood vessels and regulate local blood flow in blood vessels of patients, thus exerting antithrombotic effects [23]. The results of this study revealed that the ET-1 and vWF indices of the patients in the RG after nursing were significantly lower than those in the CG, while the eNOS indexes were significantly higher than those in the CG, indicating that rehabilitation nursing combined with xingnaojing can effectively improve their vascular endothelial function. We also compared the adverse events of patients in the process of nursing and treatment, and found that the incidence of adverse events in the RG was significantly lower than that in the CG, indicating that the rehabilitation nursing mode can reduce adverse incidences in patients as well as negative effects caused by cognitive function and limb dysfunction. We also invited patients in the two groups to evaluate the nursing satisfaction of the two different nursing treatment modes. The evaluation results showed that the nursing satisfaction of the patients in the RG was significantly higher than that of the CG, which meant that rehabilitation nursing can better and more comprehensively take care of each patient and gives a better sense of the nursing experience. At the end of this study, the quality of life of patients in both groups was evaluated. Some studies show that poor quality of life is one of the key outcomes of patients with acute stroke, which plays a vital role in cost-benefit analysis of treatment and prognosis [24]. Other studies have shown that nursing intervention measures for patients with acute stroke can effectively improve their quality of life and improve their long-term survival rate [25]. However, the results of this study showed that the scores of quality of life of patients in the RG after nursing treatment intervention were significantly higher than those in the CG, which indicated that the rehabilitation nursing mode could improve their self-rehabilitation abilities and quality of life.

Although this study proved that rehabilitation nursing can bring greater benefits to acute stroke patients treated by xingnaojing, there is still room for improvement. For example, we can further evaluate the treatment compliance

of acute stroke patients and analyze the risk factors that affect their adverse prognosis, which will help nursing staff to identify which risk factors need to be given more attention. In the future, supplementary research will be carried out gradually from the above perspective.

Conclusion

Rehabilitation nursing combined with xingnaojing can provide better nursing quality for patients with acute stroke, improve intracranial blood flow velocity and cerebrovascular endothelial function, and can be popularized in clinical practice.

Disclosure of conflict of interest

None.

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