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Effect of continuous nursing on serum factors, quality of life and mood conditions in patients suffer from spinal fracture complicated with spinal cord injury.

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Abstract

Aims: To explore the effect of continuous nursing on serum inflammatory factors, quality of life and mood conditions in patients with spinal fracture and spinal cord injury.
Methods: 74 patients suffered from spinal fracture complicated with spinal cord injury treated in our hospital from September 2015 to September 2017 were randomly divided into study group (37 cases) and control group (37 cases). The control group was given routine nursing, and the study group was given continuing nursing care for 6 months. Serum inflammatory factors, quality of life and mood conditions of patients were compared in two groups.
Results: The levels of serum inflammatory factors in two groups 1 week after discharge were significantly lower than those before discharge. The levels of CRP and TNF-α were decreased more significantly in study group and the difference was statistically significant (P<0.05). Six months after discharge, the scores of quality life (SF-36) in study group were higher than that in control group, and the difference was statistically significant (P<0.05). The scores of SAS and SDS in study group were significantly lower than those in control group. The difference was statistically significant (P<0.05).
Conclusion: Continuous nursing care for patients suffer from spinal fracture complicated with spinal cord injury can reduce the level of serum inflammatory factors, improve the quality of life of patients and improve the patients' mood conditions. The effect is worthy of recognition.

Keywords: Continuity of care, Spinal fractures, Spinal cord injury, Inflammatory factors, Quality of life, Mood conditions.

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Introduction

Spine fractures are more common in young men, mostly caused by indirect external force. Patients with severe spinal cord injury in varying degrees can cause complete paraplegia [1]. Spinal fracture complicated with spinal cord injury have great trauma to human body. The level of inflammatory factors in serum at the initial stage of disease can be significantly increased, affecting prognosis, and the diseases usually take about one year to recover [2]. Studies have shown that a series of rehabilitation and hospital care for patients during this period may help to improve the quality of life [3]. This study examined the effects of continuous nursing care on inflammatory factors, quality of life and mood conditions in patients suffered from spinal fracture complicated with spinal cord injury, and has achieved certain results.

Materials and Methods

Normal information

74 patients suffered from spinal fracture complicated with spinal cord injury treated in our hospital were selected as the research objects from September 2015 to September 2017, included 61 males and 13 females, aged 19-44 y, mean age (32.6 ± 9.5 y). The patients were divided into study group and control group by random number method. Each group had 37 cases. The study group had 30 cases of male and 7 cases of female, mean age (33.7+8.1) years, 15 cases of traffic accidents, 12 cases of high-altitude fall, 10 cases of heavy injury. Of patients with spinal cord injury, 7 cases ware located in the cervical spinal cord, 11 cases ware located in the thoracic spinal cord and 19 cases ware located in the lumbosacral spinal cord. The control group had 31 cases of male and 6 cases of female, mean age (31.9+9.3) years, 17 cases of traffic accidents, 9 cases of high-altitude fall, and 11 cases of heavy injury. Of patients with spinal cord injury, 6

cases ware located in the cervical spinal cord, 10 cases ware located in the thoracic spinal cord and 21 cases ware located in the lumbosacral spinal cord. There was no significant difference between two groups in gender, age and other general clinical data (P>0.05).

Treatment methods

Control group: The control group received routine nursing during hospitalization. We had nursing guidance for patients and their families before discharge, including: rehabilitation training, daily care, prevention and care of complications [4].

Study group: On the basis of routine nursing in control group, extended nursing care was carried out. Specific methods are as follows: (1) follow up time: 2 times a week follow-up care at the first month after discharge,; changed to 1 time a week follow-up care after 1 months later and followed up to 6 months after discharge [5]. (2) Establish personal files and family nursing handbook: We set up a special follow-up nursing file during the follow-up period, detailing the professional staff care content, quality, and effect etc. [6]. (3) Health education: We introduced the relevant knowledge and protective measures of spinal cord injury to patients and their families in order to make patients understand the disease fully so as to cooperate with each other better. (4) Rehabilitation training: We formulated the correct rehabilitation-training plan according to location, degree, clinical symptoms and physical fitness of the injured spinal cord. The basic principle of rehabilitation training was from simple to complex, the movement range was from small to large, simple to fine. Patients with cervical spinal cord injury were given pronunciation and swallowing training at last. We informed the families of basic methods of rehabilitation training, urging them to carry out daily training to consolidate. Appropriate intensity of rehabilitation should be pay attention to, recommended 2 times a day, each time 60-90 min. Patients were advised to exercise around the limb before and 20 min after massage to promote blood circulation [7]. (5) Psychological intervention: During follow-up care, we talked with patients kindly and got trust from them, fully understood the patient's mental state and often used encouraging words to establish confidence for patients. The patients were told that the spinal cord injury had a longer recovery period and could not be impatient for success. Patients with anxiety and depression tendency were received psychological counselling in time. The strength of the family needed to be actively played, took more encouragement, comfort, praise words, so that patients could fully feel the warmth from family [8].

Observation index

Detect the serum inflammatory factors before discharge and one week after discharge, including C Reactive Protein (CRP), Procalcitonin (PCT) and Tumor Necrosis Factor alpha (TNF-alpha) [9]. The SF-36 quality of life score was used to evaluate the quality of life in patients before discharge and 6 months after discharge, including general health, physiological function, physiological function, body pain, vitality, social function, emotional function and mental health. The score was converted to 100 percent standard. The higher the score was, the stronger the ability to represent. SDS and SAS were used to assess the mood conditions of the patients before discharge and 6 months after discharge, which SDS<53 and SAS<50 were normal.

Statistical methods

SPSS 21 software was used to analyse all the data in this study, and the measurement data were expressed as $\bar{x} \pm S$. The t-test was used between the two groups and $p<0.05$ was considered statistically significant.

Results

Comparison of serum levels of inflammatory factors in two groups

There was no significant difference in serum levels of inflammatory factors between two groups before discharge (P>0.05). The levels of serum inflammatory factors in two groups 1 week after discharge were significantly lower than those before discharge, and the levels of CRP and TNF-α were significantly decreased in two groups (P<0.05, Table 1).

Table 1. *Comparison of serum inflammatory factors in two groups ($\bar{x} \pm s$).*

Groups	Time	CRP (mg/L)	TNF-α (ng/L)	PCT (μg/L)
Control group (n=37)	Before discharge	103.6 ± 22.5	386.7 ± 53.2	0.9 ± 0.1
	1 w after discharge	23.8 ± 7.7	133.4 ± 18.7	0.4 ± 0.2
Study group (n=37)	Before discharge	115.1 ± 28.4	396.2 ± 55.5	1.0 ± 0.2
	1 w after discharge	51.6 ± 9.3*	192.3 ± 20.9*	0.5 ± 0.2

PS: Compared with the observation group, *P<0.05.

Comparison of life quality in two groups

There was no significant difference in the quality of life after discharge between the two groups. Six months after discharge, the scores of SF-36 in the observation group were higher than that in the control group, the difference was statistically significant (P<0.05, Table 2).

Table 2. *Comparison of life quality in two groups ($\bar{x} \pm s$).*

Projects	At discharge		Six months after discharge	
	study group (n=37)	Control group (n=37)	Study group (n=37)	Control group (n=37)
Physiological function	53.2 ± 7.1	54.3 ± 6.8	69.6 ± 6.2*	62.5 ± 5.9
Physiological function	42.3 ± 6.6	44.1 ± 6.8	66.4 ± 5.8*	55.3 ± 6.4

Body pain	53.6 ± 6.9	55.4 ± 7.2	75.5 ± 6.3*	63.8 ± 8.1
Social Function	43.8 ± 5.4	44.2 ± 5.8	65.9 ± 5.8*	54.1 ± 6.0
General Health	38.4 ± 6.5	37.5 ± 6.9	56.4 ± 6.6*	47.3 ± 6.2
Vitality	40.8 ± 6.7	41.2 ± 5.5	69.1 ± 5.3*	62.2 ± 4.7
Emotional function	55.7 ± 5.8	54.1 ± 6.1	80.6 ± 5.9*	71.5 ± 6.5
Mental health	52.2 ± 6.4	53.5 ± 6.2	77.4 ± 6.8*	63.5 ± 5.9

PS: Compared with the control group, *P<0.05.

Comparison of mood conditions in both groups

There was no statistically significant difference in SAS and SDS scores between the two groups before discharge (P>0.05). Six months after discharge, the scores of SAS and SDS in study group were significantly lower than those in control group. The difference was statistically significant (P<0.05, Table 3).

Table 3. *Comparison of mood conditions in both groups ($\bar{x}$ ± s).*

Groups	SAS		SDS	
	At discharge	Six months after discharge	At discharge	Six months after discharge
Study group (n=37)	60.9 ± 8.3	36.4 ± 8.8*	62.6 ± 5.7	37.9 ± 6.2*
Control group (n=37)	58.1 ± 7.9	45.1 ± 7.2	63.2 ± 6.4	46.4 ± 5.9

PS: Compared with the control group, *P<0.05.

Discussion

Spinal fracture accounts for nearly 5% of traumatic fracture. Neck fractures may influence the function of phonation and deglutition because the combination of spinal cord injury shows paralysis, sensation and urination disorder [10]. The recovery of these patients mainly depends on the degree of spinal cord injury and convalescence [11]. As a result, it can be seen the importance of nursing in the whole process of rehabilitation. With the continuous improvement of nursing quality and technology, continuous nursing has been widely used in clinical practice in recent years. Continuous nursing uses a series of designed actions to ensure that patients can be nursed in different levels of collaboration and continuity of care in the different places (such as from hospital to home) and the same nursing places (the same place in different departments of hospitals). The continuous nursing method nurses the patients by making follow-up plan, establishment of personal record, common disease education and regular rehabilitation training guidance and psychological intervention according to different patients [12]. The main care extension process extends from hospital to home care. Some studies suggest that patients with spinal cord injury are unrealistic to have the entire recovery period in hospital situation due to the longer spinal cord injury recovery period. Recovery period of functional exercise is an important factor in determining the prognosis of patients, so it may be effective to apply persistent care to such patients [13]. We developed a detailed rehabilitation program through the investigation and understanding of the basic condition in the patient's disease. Patients are supervised and guided by telephone on a regular basis for the duration and frequency of rehabilitation training after discharge. At the same time, we could improve the understanding of patient's diseases through the explanation of the whole column fracture and spinal cord injury process, the importance of continuous rehabilitation training and a series of attention after discharge. In addition, we reduced the anxiety and tension in the rehabilitation process of patients through psychological intervention, and improved the compliance of patients in the whole nursing process, which is of great significance to speed up the recovery rate.

In this study, 74 patients suffered from spinal fracture complicated with spinal cord injury were collected and grouped by randomization. The observation group was given a duration of 6 months of continuous care, the control group given routine care. The results showed that the levels of serum inflammatory factors (CRP, TNF-alpha) in the observation group were significantly lower than that in the control group 1 week after discharge, the difference was statistically significant (P<0.05). Fractures, surgery, stress can increase the level of inflammatory factors in the body. With the recovery of the disease and the disappearance of stress, the level of inflammatory factors gradually decreased. The serum CRP, TNF-alpha and PCT levels of the two groups were all at a high level before discharge. In recent years, many studies have confirmed that psychological factors and mood conditions can also produce stress, so that the level of serum inflammatory factors continues to rise [14]. Patients in the observation group were treated with continuous care after discharge. Their mood conditions were diverted and intervened, so that the level of inflammatory factors decreased more significantly. 6 months after discharge, the scores of SF-36 in the observation group were higher than those in the control group, and the difference was statistically significant (P<0.05). Orderly rehabilitation training can improve the physical and physiological functions of patients, and individualized psychological intervention can improve the emotional function, social function and mental health of patients [15]. The decrease of inflammatory factors reduced the body pain, improved the body, physiological function and mood, and improved the overall health and vitality [16]. The study showed that the overall quality in the observation group was improved. In addition, this study also evaluated the psychological status of patients by objective SAS and SDS self-assessment table, the results in study were still better than that in control group, the difference was statistically significant (P<0.05). This further confirmed the importance of psychological intervention in continuity of care.

Continuous nursing care for patients suffered from spinal fracture complicated with spinal cord injury could reduce the levels of serum inflammatory factors, improve the quality of life in patients, and improve mood conditions, the effect is worthy of recognition.

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