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Effect of "modular" nursing intervention on residual low back pain in patients with osteoporotic thoracolumbar compression fractures

Yang Guo [1], Xiaojie Sun [2], Miao Tai [2], Fang Liu [1], Xiaowei Liu [1] and Jie Yao [1*]

[1] College of Nursing, Shaanxi University of traditional Chinese Medicine,xianyang 712000, China.
[2] Affiliated hospital of shaanxi university of Chinese medicine, xianyang 712000, China.
[*]Corresponding author e-mail:344246303@qq.com

ABSTRACT. *Objective: To explore the effect of "modular" nursing intervention on residual low back pain in patients with osteoporotic thoracolumbar compression fractures. Method Forty patients with residual low back pain after OVCF undergraduate treatment were selected and randomly divided into observation group and control group, each with 20 cases. The control group was given routine care; Pain relief (VAS score), anxiety self-assessment scale (SAS self-assessment scale) and quality of life* ***SCORE*** *(WHOQOL-100) situation. Result: The pain of the two groups of patients was alleviated, but on the 3rd and 7th day of postoperative care in the observation group, the VAS scores were lower than the control group, and the pain of the patients almost disappeared. The difference between the two groups was statistically significant (P <0.05); In the SAS self-assessment scale, the anxiety of the observation group was significantly lower than that of the control group. The anxiety of the patients was reduced, and they actively cooperated with treatment. The compliance was better; after 7 days of care, the quality of life scores of the two groups of patients were significantly improved compared with those before the care The improvement of the observation group was higher than that of the control group, and the difference was statistically significant (P <0.05). Conclusion: "Modular" nursing for patients can effectively reduce postoperative residual low back pain, reduce their anxiety and improve the quality of life.*

KEYWORDS: *Modularity,* ***OSTEOPOROTIC*** *fracture, VAS score, SAS self-rating scale, quality of life*

1. Introduction

Osteoporosis (OP) is a systemic skeletal disease characterized by reduced bone

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mass and destruction of bone tissue microstructure, resulting in increased bone fragility, which leads to an increased risk of bone fracture [1], and more Seen in postmenopausal women and elderly men [1], with the aging population in China, the incidence rate has gradually increased, and it is also a common cause of elderly people, causing low back pain and fractures, including osteoporotic vertebral compression fractures (osteoporotic vertebral compression fracture, OVCF) is the most common [2], which brings huge pain and financial burden to patients and their families. OVCF refers to the fracture of vertebral bone density, bone quality and bone strength caused by OP, which occurs under slight external force [3]. The main treatment methods for it are conservative treatment and surgical treatment. At present, minimally invasive surgery It is prevalent, its advantages are outstanding, and its curative effect is obvious, but related reports show that about 10% of patients have residual low back pain after surgery [4], and clinical nurses do not have an in-depth analysis of the possible causes of pain when patients experience pain. Routine nursing failed to effectively relieve patients' pain. Therefore, this article selected 40 patients with residual low back pain after OVCF from March 2018 to June 2019. The intervention model of "modular" nursing was basically eliminated after the operation. Postoperative residual low back pain, reduce anxiety and improve the patient's quality of life.

2. Data and Method

2.1 General Data

Forty patients with residual low back pain after OVCF surgery in our hospital from March 2018 to June 2019 were selected. The VAS scores were all moderate pain and were randomly divided into an observation group and a control group. There were 20 cases in the observation group, including 8 males and 12 females; aged (75.38±2.43) years old; 20 in the control group, 10 males and 10 females; aged (75.60±2.15) years old. There was no statistically significant difference between the two groups in general data (P> 0.05), which was comparable.

Inlusion criteria:1) Meet the diagnostic criteria in "Guidelines for the treatment of osteoporotic vertebral compression fractures" [5] ①Clinical manifestations: deformity of kyphosis, chronic pain in the lower back, decreased height, back muscle contractures, and pain; ②X-ray showed that the vertebral cortical bone was interrupted, and MRI examination showed that the signal of the injured vertebral body showed a low signal on T1 and a high signal on T2. 2) Patients with low back pain after surgery, with a pain score>3, without spinal cord injury and neurological symptoms. 3) Sign the informed consent form and agree to accept the nursing model.

Exclusion criteria:①The patient recovered well after surgery, without residual pain or mild pain in the lower back, VAS score ≤ 3 points; ②There are contraindications for surgery; ③Abnormal blood coagulation function, autoimmune system disease; Malignant tumor; Heart, brain, lung, etc. Severe diseases of

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important organs; ④Those with intellectual disabilities who cannot communicate normally.

2.2 Method

The control group was given routine care: monitoring the patient's vital signs, observing changes in the patient's condition, performing medication according to the doctor's instructions, turning over regularly, keeping the incision dry and sterile, guiding functional exercise, regular diet and psychological care.

Observation group gave "modular" nursing intervention based on routine nursing:

(1) Nursing staff through clinical practice combined with consulting a large number of literature to summarize the causes of residual pain: ①OP aggravation: With age, bone reconstruction in elderly patients with bone loss is in a negative balance, on the one hand, due to increased absorption of osteoclasts, On the other hand, due to the decline of osteoblast function, bone mass decreases; various cytokines affect bone metabolism and reduce osteogenic activity [6]; and estrogen reduction is one of the important reasons leading to OP in postmenopausal women, outdoor exercise The reduction of OP can also aggravate OP [7]; ②Changes in comfort: Most patients are elderly patients, postoperative posture braking, usually lying in bed for 24-48 hours, long-term maintaining the same posture can cause patients with lumbar and back muscle rigidity and atrophy, As a result, the balance of the local muscle tissue is broken, the comfort level is reduced, and tension, anxiety, irritability and other emotions are easily generated. ③Negative emotions can reduce the patient's pain threshold and thus aggravate the pain [8]; After the operation, the importance of functional exercise is insufficiently understood. During bed rest, the back muscles cannot be effectively exercised, which reduces the strength of the back muscles and the compression of the lumbar spine. The ability to increase the pain; ④bone cement leakage pain [1]: generally caused by the injection of bone cement, the compound leaked into the intervertebral foramen and intervertebral space, according to literature reports, 8.6% of the treatment appeared bone Leakage of cement can cause pain, and there can be changes in lower limb muscle strength, sensation and even bowel movements.

(2) Cognitive intervention: Nursing staff should introduce the pathogenesis, clinical manifestations and treatment methods of osteoporosis OVCF to patients and their families in detail to improve their understanding of the disease; advise patients to add calcium and vitamin D in time during treatment After oral administration of calcium, patients should be encouraged to drink more water to prevent urinary tract stones. The current recommended daily intake of calcium in domestic and foreign guidelines [6]: 50-70 year old male 1000 mg / d; 71-year-old male 1200 mg / d; the recommended daily intake of vitamin D is 800-1000U, the best dietary supplements, when adequate vitamin D cannot be taken in the diet, anti-osteoporosis drugs can be given as directed by the doctor; Supplement estrogen, etc.

(3) Behavioral intervention: Nursing staff should instruct the patient to rest on the rigid board bed for the first hour after surgery to keep the thoracolumbar

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spine horizontal and maintain a certain functional position, and the waist should be braked; in the second hour, the patient can assist the patient to roll over or roll to sleep The body is consistent up and down, and the patient feels comfortable; 3 hours after surgery can assist the patient to sit up on the bed and gradually go down to the ground [9].

(4) principle of functional exercise: as early as possible, step by step, from less to more. On the first day after surgery, instruct the patient to perform dorsal extension, plantar flexion, and quadriceps contraction exercises on the bed. Straight leg raising exercises can be performed after 3-4 days, and empty pedal exercise can be performed on 5-7 days. One week later Instruct patients to perform "three-point" and "five-point" functional exercises for low back muscles; for diet, instruct patients to drink a glass of light saline or warm water, about 200ml, 2 hours after surgery, and then the first meal with a light, easily digestible fluid Or semi-liquid diet-based, avoid milk, soy milk, etc to avoid bloating; after 3-4 days, enter a soft diet or general food that is easy to digest, low fat, high iron, water and collagen fiber, can be supplemented with fresh milk, Honey water, etc avoid spicy stimulation, cold, cold and other diets; diet contraindications can be lifted after 7 days, a high-protein, high-vitamin, cellulose diet should be suitable to maintain smooth stools, promote wound healing, prevent complications, and improve body immunity.

(5) Targeted psychological intervention: Most of the patients are elderly people, and most of them are in negative psychological states such as anxiety and tension before surgery. However, the stress of surgery and the post-operative rehabilitation and anxiety can exacerbate pain. Explain the connection between the patient's emotions and disease, tell him to maintain a stable mood, psychologically communicate with the patient and his family, and create a warm family atmosphere for him. Strengthen communication and communication with patients, encourage patients to take the initiative to tell their dissatisfaction and reasonably vent; distract patients by telling stories and chatting after the operation, and teach patients to breathe training, relax, and divert attention Ways to relieve psychological pressure, raise the pain threshold, increase tolerance to pain, and increase confidence in defeating the disease.

(6) Home health guidance:①Mainly bed rest, emphasizing sleeping hard bed, need to wear waist circumference for 1-3 months to get out of bed, avoid strenuous exercise, do not lift heavy objects, do not bend over excessively, continue to strengthen the back muscle function exercise, Can't bear weight within half a year, avoid physical labor within one year;②Eat high-calcium foods, such as dairy products, beans, etc., can drink a glass of milk 1h before going to bed, eat more crude fiber diet, keep the stool smooth, use hazelnuts and walnuts in moderation And other nut foods to add trace elements; ③ healthy lifestyle, moderate participation in outdoor sports, more sun exposure, increase exercise gradually, and often do aerobic exercise, such as Tai Chi, walking, etc quit smoking and alcohol;④ encourage and guide family members to participate in daily care In order to prevent falls, let patients maintain an optimistic attitude towards life.

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2.3 Observation Indexes and Evaluation Citeria

①VAS score: The lower the score, the less painful; ②SAS score scale: The lower the score, the lower the anxiety; ③Quality of life assessment standards based on WHO quality of life Scale (WHOQOL-100) for evaluation[10]:There are 6 areas of support and independence, and the higher the score of the patient, the higher the quality of life.

2.4 Statistical Treament

SPSS19.0 statistical software package was used to process the data. The measurement data is represented by (x±s), and tested with t test. Inspection level α=0.05.

3. Results

3.1 VAS score results of two groups of patients after nursing

The results showed that the pain of the two groups of patients was alleviated. The VAS score of the observation group was lower than that of the control group on the 3rd and 7th day of postoperative care, the difference between the two groups is statistically significant (P <0.05), as shown in Table 1.

Table 1 Comparison of VAS Scores ($\bar{x}$±s, unit: Mark)

Group	n	Before nursing	After 3 days of care	After 3 days of care
Control group	20	4.55±0.67	3.20±0.64 *	2.50±0.76 *
Observation group	20	4.55±0.76	1.65±0.75*	0.55±0.51 *
Z		-0.14	-4.70	-5.29
P		>0.05	<0.05	<0.01

3.2 SAS self-rating scale score after nursing in two groups

the SAS self-assessment scale, the degree of anxiety of patients in the observation group after nursing was significantly lower than that in the control group, which greatly reduced the anxiety of patients and made them cooperate with treatment, The difference between the two groups is statistically significant (P <0.05), as shown in Table 2.

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Table 2 Comparison of SAS Scores ($\bar{x}$±s, unit: Mark)

Group	n	Before nursing	After 3 days of care
Control group	20	86.00±1.81	75.95±1.64*
After 3 days of care			60.175±1.71*
Observation group	20	85.50±1.64	65.40±1.54*
			44.15±1.66*
Z		-1.01	-5.44
			-5.43
P		>0.05	<0.01
			<0.05

3.3 Two groups of patients' quality of life score

After 7 days of care, the quality of life scores of the two groups of patients were significantly improved compared with that before the care, and the improvement of the observation group was higher than that of the control group,The difference between the two groups is statistically significant (P <0.05), as shown in Table 3.

Table 3 Comparison of Quality of life score ($\bar{x}$±s, unit: Mark)

Group	n	Before nursing	After 3
days of care			
Control group	20		11.16±1.07
			13.32±0.98
Observation group	20		11.20±1.32
			16.14±1.10
T			1.33
			3.15
P			>0.05
			<0.05

4. Discussion

“Modularity” originates from the design of computer hardware and software. Because of its effect of reducing complexity to simplicity, this concept has been absorbed and practiced in many industries including teaching [11]. After the residual pain, use the "modular" nursing intervention to find the cause and formulate a nursing plan. Compared with the control group, it was found that with the increase of the intervention time, the observation group's nursing intervention was basically painless and anxious after 7 days This result is basically consistent with the conclusion of Li Xiaoyan and others [12] that this model is applied to endoscopic surgery, and it can also formulate measures such as psychological counseling and health education; Intervention to reduce residual low back pain in patients with osteoporotic OVCF is feasible. The data shows that the patient's pain level is

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significantly less than that of conventional care, and the difference is statistically significant (P <0.05) The superiority of cognitive intervention and behavioral intervention in clinic.

The data of this study shows that the self-anxiety score of the observation group is significantly lower than that of the control group, and the difference is statistically significant (P <0.05), which further illustrates the importance of targeted psychological care. , So that it can vent bad emotions, better improve psychological conditions, reduce its stress, and enable it to actively cooperate with treatment [13-14]. At the same time, the nursing staff implements nursing according to the different educational levels of the patients, which makes the whole psychological nursing highly targeted and better improves their bad mood [15].

The results of the study showed that the quality of life scores of the two groups of patients after care were improved compared with those before the care, but the improvement of the observation group was significantly higher than that of the control group, and the difference was statistically significant (P <0.05) Nursing intervention can improve the quality of life of patients. The whole nursing process is divided into five modules: finding the cause, cognitive intervention, behavior, psychological intervention and home guidance, which can actively mobilize the patient ’s life initiative and enable it to face the correct Diseases, better care, and greatly improve the quality of life of patients.

In summary, “modular” nursing can effectively reduce residual pain and improve the quality of life of OVCF patients, but its intervention time is short, the study sample size is small, and the long-term effect is not yet known. Combine with other hospitals to increase the sample size, extend the intervention time, and continue to explore the clinical effect of "modular" nursing intervention.

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