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Original Article

Effect of comfort care on pain degree and nursing satisfaction in patients undergoing kidney stone surgery

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Abstract: Objective: To investigate the role of comfort care on pain degree and nursing satisfaction in patients undergoing kidney stone surgery. Methods: Altogether 107 patients undergoing kidney stone surgery were obtained as the research participants and randomly grouped into the nursing group (NG, 55 cases) and the control group (CG, 52 cases). The operation and medication modes of patients in the NG and the CG were the same. Patients in the CG were given routine care, while those in the NG were given comfort care on the basis of the CG. After intervention, the pain, mood, sleep quality, complications and nursing satisfaction of the NG and the CG were compared. Results: The pain score, SAS and SDS scores of the NG were evidently lower than those of the CG, and the sleep quality was evidently better than that of the CG ($P<0.05$). The incidence of complications in the NG was 9.0%, which was evidently lower than that in the CG (25.0%), and the nursing satisfaction of the NG was evidently higher than that in the CG ($P<0.05$). Conclusion: Comfort care can effectively relieve pain, as well as improve poor moods and the sleep quality of patients with kidney stone surgery, and as such it has a good clinical effect.

Keywords: Comfort care, kidney stones, pain degree, sleep quality, nursing satisfaction

Introduction

Urolithiasis is common in the urinary system, while the kidney stone is very typical, the calcium oxalate stone is the most common one [1]. Most patients have no obvious symptoms, unless small stones move in the renal pelvis or ureter and cause ureteral obstruction, which often causes severe pain. The typical symptoms are hematuria and renal colic, which can easily lead to urinary tract obstruction and infection, and renal function damage in serious cases [2, 3]. In recent decades, the diagnostic techniques have made rapid development, such as extracorporeal shock wave lithotripsy (ESWL) [4], holmium laser lithotripsy with flexible ureteroscope [5], percutaneous nephrolithotomy (PCNL) [6], and ureteroscopic lithotripsy (URL) [7]. However, urinary stones often recur, 75% of patients with stones will have recurrence within 15 years, and the median time of the second occurrence of stone is 9 years [8]. There is a high recurrence rate and residual rate of renal calculi after lithotripsy. The etiology of the kidney stone is complex, which is related to heredity [9], environment [10], living conditions [11], systemic metabolic disorder [12] and urinary system diseases [13]. Studies have shown that [14, 15], male patients with urinary calculi are the majority, which may be related to sex hormones.

At present, minimally invasive surgery is mostly applied in kidney stones, and the wounds caused by minimally invasive surgery are smaller, and patients can recover faster [16]. During surgical intervention, some patients often have negative emotions such as anxiety and depression from the pain caused by the disease and the pressure of surgical treatment, thus affecting the condition of patients. In addition, due to the differences in individual condition and pain tolerance, the postoperative pain degree of patients is also different [17]. Relevant data show that good nursing care is beneficial to pain relief [18]. However, there is little research on comfort care, a postoperative nursing method for patients undergoing kidney stone surgery, on relieving pain after surgery. This time, we performed comfort care to intervene in

patients undergoing kidney stone surgery, and the pain and nursing satisfaction of patients after surgery were observed, which is reported as follows.

Materials and methods

Research participants

A total of 107 patients undergoing kidney stone surgery from August 2019 to August 2020 were obtained and randomly grouped into the control group (CG) and the nursing group (NG). There were 52 cases in the CG, including 28 men and 24 women with an average age of (48.36±2.74) years and an average course of disease of (6.4±2.6) months. There were 55 cases in the NG, including 29 men and 26 women, with an average age of (49.27±2.62) years and an average course of disease of (6.2±3.1) months. Patients in both groups were confirmed as having kidney stones before operation, and there were no special contraindications in the examination. All indicators were normal. The consent forms were obtained from the families of the participants. Patients' communication ability was normal, and there were no malignant tumors, mental diseases and other major diseases. This research has been approved by Medical Ethics Committee of our hospital. There was no evident difference in age, sex and disease condition between the NG and the CG ($P>0.05$).

Methods

The CG was given routine care, including health education, observation of physical signs, informing patients of the precautions during surgical treatment, and giving proper diet and medication guidance according to the clinical situation.

On the basis of routine care given to the CG, the NG was additionally given comfort care: (1) Detailed assessment of patients' condition, health education, and nurses lead the patients to familiarize themselves with the environment and the functions of various examinations. Preparations were carried out before each test, and comfortable nursing measures were formulated according to the specific conditions of patients and the examination results. (2) The operating room temperature was adjusted in advance, and a comfortable position for the operation was told to the patients. The staff communicated with patients with enthusiasm and sincerity, correctly assessing the pain degree of patients, constantly communicating and encouraging patients, and analyzed problems from the perspective of patients, so that patients can keep a positive and optimistic attitude and calmly face treatment. (3) When placing patients after surgery, a comfortable position that can relieve pain was chosen. When the pain was obvious, the method of transfer of thinking was applied to help patients relax, and patients were massaged to help relieve pain. In case of needing examination or vomiting reaction, timely assistant was applied to help patients.

Outcome measures

Visual analogue scale (VAS) [19] was applied to test the pain at 12 h, 24 h and 48 h after operation, with 0-10 points (0 was taken as painless, 1-3 as mild pain, 4-6 as moderate pain, 7-9 as severe pain and 10 as severe pain).

Pittsburgh sleep quality scale (PSQI) [20] was applied to evaluate the sleep quality, which includes sleep quality, sleep time, sleep duration, sleep efficiency, sleep disorders, hypnotic drugs, and daytime dysfunction. The score ranged 0-3 points, with a total of 21 points. The higher score indicates the worse sleep quality.

The self-rating anxiety scale (SAS) [21] and depression scale (SDS) [22] were applied. The scores of SAS were 50-59 for mild anxiety, 60-69 for moderate anxiety and more than 70 for severe anxiety. The scores of SDS were 53-62 for mild depression, 63-72 for moderate depression and more than 70 for severe depression.

The postoperative complications of the NG and the CG were investigated, including wound infection, bleeding and urinary extravasation.

The satisfaction questionnaire was adopted to investigate the satisfaction, with scores of 0-100 points and 10 items, and each item was 0-10. The scores were more than 90 for satisfactory, 80-90 for general, below 80 for unsatisfactory (total satisfaction = satisfactory + general).

Statistical methods

SPSS 22.0 was applied for statistical analysis. Graphpad prism 8 (GraphPad Software, San

Table 1. General data

	Gender [Male/Female]	Age (Y)	Course of disease (Y)
CG (n=52)	28/24	48.36±2.74	6.4±2.6
NG (n=55)	29/26	49.27±2.62	6.2±3.1
χ^2/t	0.01344	1.7561	0.3605
P	0.9077	0.0819	0.7192

Table 2. Comparison of pain

	Preoperative	12 hours after operation	24 hours after operation	48 hours after operation
CG (n=52)	6.94±1.06	5.64±1.18	5.01±1.36	4.28±1.22
NG (n=55)	6.88±1.12	4.13±1.03	3.54±0.82	3.11±0.94
χ^2/t	0.2843	7.0623	6.8134	5.5747
P	0.7768	<0.0001	<0.0001	<0.0001

Table 3. PSQI score of sleep quality index

	Before nursing	After nursing
CG (n=52)	13.58±1.52	10.26±1.31
NG (n=55)	13.71±1.44	7.93±1.01
χ^2/t	0.4543	10.3365
P	0.6505	<0.0001

Diego, USA) was applied to visualize the figures. The measurement data were represented by mean ± SD and compared by t test. The counting data were represented by n (%) and tested using χ^2. The difference was statistically evident when P<0.05.

Results

General information

There was no evident difference in age, gender and course of disease between the NG and the CG (P>0.05), and so the groups were comparable (**Table 1**).

Comparison of pain

Before operation, there was no evident difference in pain scores between the NG and the CG (P<0.05). After 12 hours, 24 hours and 48 hours, the pain scores of patients in both groups declined, and the degree of decline in the NG was evidently greater than that in CG (P<0.05), as shown in **Table 2**.

PSQI score of sleep quality index

There was no evident difference in PSQI scores between the NG and the CG before nursing (P<0.05). After nursing, the PSQI score of the NG was evidently lower than that of the CG (P<0.05), as shown in **Table 3**.

SDS and SAS scores

Before care, there was no evident difference in anxiety and depression scores between the NG and the CG (P>0.05). After care, the scores of SDS and SAS in the NG were lower than those in the CG (P<0.05), as shown in **Figure 1**.

Incidence of complications

Eight cases of wound infection, 2 cases of bleeding and 3 cases of urinary extravasation occurred in the CG, with a total incidence rate of 25.0%, which was evidently lower than that of the NG (3 cases of wound infection, 0 cases of bleeding and 2 cases of urinary extravasation, with a total incidence rate of 9.0%) (P< 0.05), as shown in **Table 4**.

Nursing satisfaction

The total satisfaction of the NG was 94.6%, which was evidently higher than that of the CG (78.8%, P<0.05), as shown in **Table 5**.

Discussion

Kidney stones often occur in the renal pelvis, and the clinical symptoms are waist pain, hematuria, and retching, which seriously threatens the life and health of patients [23]. With the rapid development of medical technology, clinical surgeons have more comprehensive and superior surgical modes and techniques to treat diseases and solve life problems caused by pain. However, the disease easily recurs, and some complications may occur because of the trauma of surgical treatment [24]. Especially, the pain caused by stones can cause patients' emotions to get out of control, resulting in disputes between doctors and patients. Therefore, appropriate clinical nursing methods are very important. Comfort care is an innovative nursing model proposed by American nursing scientists in 1995 [25]. It is an individual-

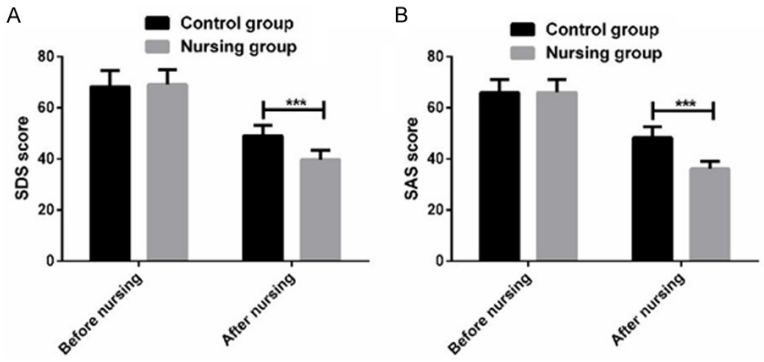

Figure 1. SDS and SAS scores of two groups before and after nursing. (A: Comparison of SDS scores between the NG and the CG; B: Comparison of SAS scores between the NG and the CG; *** means compared with the CG, P<0.001).

Table 4. Incidence of complications

	Wound infection	Hemorrhage	Urinary extravasation	Total incidence
CG (n=52)	8 (15.4)	2 (3.8)	3 (5.8)	13 (25.0)
NG (n=55)	3 (5.4)	0	2 (3.6)	5 (9.0)
χ^2/t				4.8351
P				0.0279

Table 5. Nursing satisfaction

	Satisfactory	General	Unsatisfactory	Total satisfaction
CG (n=52)	29 (55.7)	12 (23.1)	11 (21.2)	41 (78.8)
NG (n=55)	42 (76.4)	10 (18.2)	3 (5.4)	52 (94.6)
χ^2/t				5.7931
P				0.0161

ized, creative, effective and holistic nursing method with a patient-centered all-round nursing care. In the whole nursing process, it not only provides patients with good nursing and treatment measures, but also pays more attention to patients' comfort, so as to help patients recover faster [26, 27].

The results of this research revealed that after operation and nursing, the pain score, SAS and SDS scores of the NG were evidently lower than those of the CG, and the sleep quality was evidently better than that of the CG (P<0.05). Because of the special pain of kidney stones, it is difficult to achieve the analgesic effect by using drugs alone. In addition, under the pain of surgery, most patients will have anxiety and depression, and also have poor sleep quality. Comfort care is patient-centered, which follows the physiological and psychological characteristics of patients, integrates the love and responsibility of nursing staff into nursing work, meets the basic nursing requirements of patients, and at the same time, takes targeted measures to solve patients' psychology, sleep quality and pain, thus reducing postoperative pain and relieving patients' bad emotions [28]. Meanwhile, the incidence of complications in the NG was 9.0%, which was evidently lower than that in the CG (25.0%). Comfort postoperative rehabilitation guidance ensures the long-term effect of the operation, by guiding the patient to eat, it can promote the patient to urinate, make the small stones be excreted early and promote the patient's recovery. Rehabilitation guidance can promote patients' lung expansion, restore patients' physical function and ensure postoperative recovery by guiding patients to exercise properly. Improving patients' cognition of disease and prevention can help patients pay attention to self-protection in their daily life, reduce the recurrence rate and the incidence of postoperative complications [29]. The nursing satisfaction of the NG was evidently higher than that of the CG (P<0.05). Some studies have pointed out that [30], without considering the patient's medical condition, the particularity of the size and location of stones, it will lead to the irrational use of medical resources and the lack of high-quality medical programs, while comfort care can be carried out for different people and improve the prognosis of patients. Comfort care makes patients feel kind and warm, it helps to understand the patients' psychological needs, and tries to meet their needs, thus improving the satisfaction with nursing. The limitation of this study is that the sample size is relatively small, and the support for the research conclusion is relatively weak, so the sample size will be enlarged in the

follow-up. Therefore, the relative workload of nursing staff will increase, and at the same time, the nursing ability of nursing staff will be correspondingly improved to ensure the nursing quality.

To sum up, comfort care can evidently reduce postoperative pain, improve the sleep quality of patients undergoing kidney stone surgery, relieve their bad mood, reduce the incidence of postoperative complications, and help patients recover, which has high clinical application value.

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Disclosure of conflict of interest

None.

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