RESEARCH ARTICLE

Effect and satisfaction analysis of perioperative nursing in secondary hyperparathyroidism

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Abstract

Objective: To assess the effect and satisfaction of perioperative nursing in secondary hyperparathyroidism patients.

Method: The study was conducted at the General Hospital of Northern Theatre Command, Shenyang, China, from January 2021 to December 2022, and comprised secondary hyperparathyroidism patients who underwent parathyroidectomy. They were randomised into study group SG receiving preoperative, intraoperative and postoperative nursing, and control group CG receiving routine nursing. The length of hospital stay, levels of intact parathyroid hormone, calcium and alkaline phosphatase levels, incidence of complications, quality of life and nursing satisfaction of the patients in the two groups were compared. Data was analysed using SPSS 21.

Results: Of the 100 patients, 50(50%) were in SG group; 26(52%) males and 24(48%) females with mean age 50.21±5.08 years. The other 50(50%) patients were in the CG group; 25(50%) males and as many females with mean age 50.19±5.02 years. Compared to CG subjects, the length of hospital stay was shorter, intact parathyroid hormone, calcium and alkaline phosphatase levels were lower, complications were fewer, and quality of life and nursing satisfaction scores were higher among SG subjects ($p<0.05$).

Conclusion: Perioperative nursing of secondary hyperparathyroidism patients undergoing parathyroidectomy could accelerate postoperative recovery, improve serum biochemical indicators, and reduce the incidence of complications.

Keywords: Secondary hyperparathyroidism, Perioperative nursing, Complication, Biochemical indicators.

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Introduction

Chronic kidney disease (CKD) is a metabolic syndrome that is usually treated with haemodialysis when it progresses to end-stage kidney disease (ESRD).[1] With the improvement of dialysis quality, the survival period of CKD patients has been gradually extended, and the complications have also increased.[2] Secondary hyperparathyroidism (SHPT), caused by the combination of low calcium (Ca), high phosphorus and low 1alpha,25-dihydroxyvitamin D3 (1,25[OH]2D3), or vitamin D3, is one of the common complications.[3] Almost all patients have nodular or diffuse parathyroid hyperplasia and varying degrees of increased parathyroid hormone (PTH) levels, leading to bone metabolism imbalance, Ca and phosphorus metabolism disorders, and nervous system symptoms, seriously reducing the quality of life (QOL).[4]

A full understanding of the factors that stimulate the PTH synthesis is important for the design of treatment regimens.[5] Currently, the only treatment for SHPT is a kidney transplant, but the number of kidneys available for transplant is very limited, and the procedure is very expensive.[6] In recent years, parathyroidectomy has been recommended for patients with SHPT, which can effectively and rapidly relieve clinical symptoms, improve abnormal Ca and phosphorus metabolism, and improve patients' QOL and survival.[7] However, due to the abundant peripheral nerves and blood vessels of the thyroid, there are more postoperative complications that reduce the overall treatment effect to a certain extent.[8] Surgery, as a serious psychological stressor, is associated with high risk, so it is particularly important to implement perioperative nursing for patients with SHPT.[9] Studies have shown that perioperative nursing can improve patients' QOL and enhance clinical efficacy.[10] The current study was planned to probe the impact of perioperative nursing on SHPT patients undergoing parathyroidectomy.

Patients and Methods

The study was conducted at the General Hospital of Northern Theatre Command, Shenyang, China, from January 2021 to December 2022, and comprised SHPT patients who underwent parathyroidectomy. They were randomised using random number table method into study group SG and control group CG.

Those included were patients with hypercalcaemia, hyperphosphataemia and PTH >800pg/mL who had not responded to routine vitamin D administration, and

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ultrasound had located several parathyroid glands with diameter >1cm that were found to be enlarged. Those excluded were patients with severe organ diseases, and those with severe cognitive abnormalities. Written informed consent was obtained from all the participants.

CG subjects received routine nursing. The nursing staff assisted the patients in carrying out various examinations and prepared the necessary items for surgery. Postoperatively, the staff closely monitored the patients' vital signs, and followed the doctor's advice related to drug treatment to prevent complications.

SG subjects received perioperative nursing. Before the surgery, the nursing staff maintained good communication with patients and their families, explained the specific procedures and precautions of the operation, so that patients and their families had a full understanding of the operation. The nursing staff performed effective haemodialysis on patients before the surgery, clarified the application of anticoagulants in haemodialysis, and observed whether the patient had active bleeding. The patients had a routine examination and X-ray before the operation. The staff asked the patients to maintain bed-rest and reduce the intake of phosphorus-containing food, closely observed the changes in patients' condition, and took effective treatment measures in time when abnormal situations were noted. Most patients had bone pain, fracture, bone deformity, muscle atrophy and limb numbness, so it was necessary to prepare wheelchairs for dialysis patients in advance to reduce the mobility of the patients.

Intraoperatively, after the patients entered the operating room, the nursing staff established venous channels for the patients, guided and assisted them about maintaining the correct position, and assisted the anaesthesiologist in completing the anaesthesia process. During the operation, the nursing staff closely monitored the changes of the corresponding indicators based on the actual situation of the patients, and informed the attending physician in time when there was a noticeable fluctuation, and strictly controlled the infusion speed of the patients. The nursing staff brought the patients back to the ward at the end of the procedure, and used protective measures to prevent the patients from falling off the bed.

Postoperatively, when the colour and amount of drainage fluid of the drainage tube were abnormal after surgery, the nursing staff contacted the attending physician in time and assisted the attending physician in taking effective treatment measures. If the patients' neck was compressed or swollen, the doctor was contacted in time to treat the patients. The PTH level and blood Ca level of patients were reviewed every morning after surgery, and the occurrence of hypocalcaemia and hyperkalaemia of patients was monitored vigilantly, and emergency treatment procedures of hypocalcaemia and hyperkalaemia were formulated. Effective Ca supplementation measures were given to patients after the surgery. In patients who required high concentration and high-dose Ca supplementation, femoral vein or peripherally inserted central catheter (PICC) was retained to prevent the harm caused by Ca exosmosis. The occurrence of complications was observed, and effective measures were taken in time when complications occurred, and effective dietary care and psychological care were given to the patient post-surgery.

The length of hospital stay (LOS) in both groups was recorded. Further, 5mL fasting venous blood was obtained from the patients in the morning, and the upper serum was taken by centrifugation at a rotational speed of 3000 r/min. The serum Ca, alkaline phosphatase (ALP) as well as intact parathyroid hormone (iPTH) concentrations were detected using an automatic biochemical analyser (Olympus, Japan).

The incidence of complications between the groups was compared, including hypertension, anaemia, acid-base balance disorder, and mineral bone metabolism abnormality.

The QOL was assessed using the 36-item short-form (SF-36),[11] with a total score of 100, and higher score indicated better QOL of the patients.

The institutional nursing satisfaction questionnaire was used to evaluate the satisfaction level of the patients. The total score was 100, with ≥80=very satisfied, 60-80 = satisfied, and ≤60=dissatisfied.

Data was analysed using SPSS 21. Measurement data was expressed as mean±standard deviation, and *t*-test was used for comparison. Count data was expressed as frequencies and percentages, and chi-square test was used for comparison. $P<0.05$ was taken as statistically significant.

Results

Of the 100 patients, 50(50%) were in SG group; 26(52%) males and 24(48%) females with mean age 50.21±5.08 years The other 50(50%) patients were in the CG group; 25(50%) males and as many females with mean age 50.19±5.02 years (Table 1).

Table-1: Patient charactertistics.

Items	Control group (n=50)	Study group (n=50)	x^2/ *t*-test	*p*-value
Gender (male/female)	26/24	25/25	0.040	0.841
Mean age (years)	50.21±5.08	50.19±5.02	0.019	0.984
Mean haemodialysis time (years)	6.50±0.65	6.51±0.66	0.076	0.939

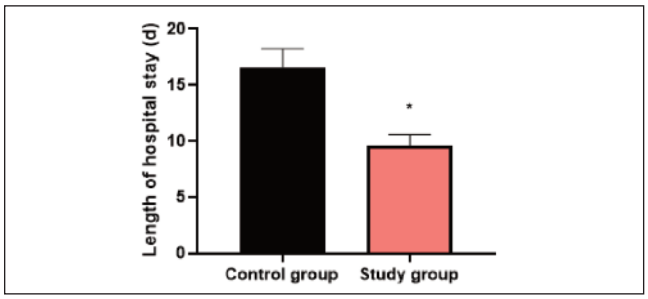

Figure-1: Length of hospital stay in the two groups.
p<0.05.

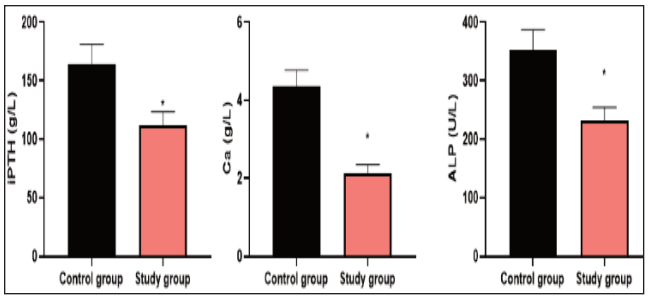

Figure-2: Levels of intact parathyroid hormone (iPTH), calcium (Ca) and alkaline phosphatase (ALP) in the two groups.
p<0.05.

Table-2: Comparison of complications between the groups.

Groups	Cases	Hypertension	Anaemia	Acid-base balance disorder	Mineral bone metabolism abnormality	Total incidence rate[n (%)]
Control	50	5	3	1	2	11 (22.00)
Study	50	2	1	0	0	3 (6.00)
x^2						5.316
***p*-value**						0.021

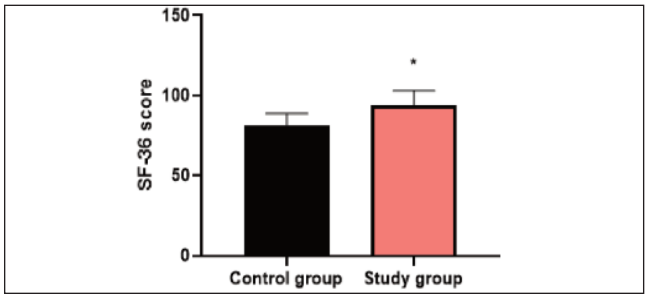

Figure-3: Short Form-36 (SF-36) score in the two groups.
p<0.05.

Table-3: Nursing satisfaction of patients in the groups.

Groups	Cases	Very satisfied	Satisfied	Dissatisfied	Total satisfaction rate
Control	50	20	20	10	40 (80.00%)
Study	50	30	18	2	48 (96.00%)
x^2					6.061
***p*-value**					0.013

Compared to CG subjects, LOS was shorter (Figure 1), iPTH, Ca and ALP levels were lower (Figure 2), complications were fewer (Table 2), and QOL (Figure 3) and nursing satisfaction (Table 3) scores were higher among SG subjects ($p<0.05$).

Discussion

SHPT is a common complication among CKD patients, which directly impacts patients' QOL.[12] Blocking SHPT progression has a very important role in promoting the QOL of CDK patients.[13] Scholars generally believe that parathyroidectomy can rapidly reduce iPTH and blood phosphorus levels in the patients, and has a good effect on improving SHPT patients' QOL.[14]

The key to the safety and effectiveness of surgical treatment is to provide perioperative nursing to the patients. Routine nursing only introduces the surgical knowledge and precautions to patients before a surgery, and pays attention to patients' condition after the surgery. However, if the medical staff does not pay attention to the patient's vital signs during the operation, the patient may be at a great risk. Perioperative nursing is the whole course of nursing around the operation, from the beginning of patients' decision to undergo surgery to the end of the operation, including a period of time before, during and after the surgery. The nursing staff prevents and intervenes in the early stage of a problem that might occur during the whole operation to reduce the risk of harm to the patients, and the purpose of service is to restore patients' health as well as improve their QOL.[10,15]

In the current study, compared to the CG subjects, LOS among the SG subjects was shorter, indicating that perioperative nursing could promote the recovery of patients, which was in line with a previous study.[16]

Besides, compared to the CG subjects, iPTH, Ca and ALP levels of the SG patients were lower. It could be seen that after the use of perioperative nursing, the biochemical indicators of the patients effectively improved, which had a positive effect on their recovery. Consistently, Luo et al. suggested that high-quality whole-course nursing could improve postoperative serum indicators and promote patient recovery in patients.[17]

Compared to the CG patients, the complication rate of the SG subjects was lower in the current study, implying that perioperative nursing could lessen the incidence of complications, and ensure the safety of the patients during the treatment, which was consistent with a relevant study.[9] Additionally, it could be seen that compared to the CG patients, the SG subjects had higher QOL scores and nursing satisfaction, reflecting that perioperative nursing could improve the physical and mental state of the

patients, establish a harmonious doctor-patient relationship, and have good social benefits, which was in accordance with an earlier study.[18]

The current study has limitations as the sample size was not calculated, which could have affected the power of the study and the validity of the findings.

Conclusion

Perioperative nursing of SHPT patients undergoing parathyroidectomy could accelerate postoperative recovery, improve serum biochemical indicators, and reduce the incidence of complications. Disclaimer: None.

Conflict of Interest: None.

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