

Analysis of the effect of advanced nursing on the quality of life and the prevention of complications in patients with breast cancer undergoing PICC chemotherapy

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Abstract: **Objective:** To investigate the effect of advanced nursing on the quality of life and the prevention of complications in patients with breast cancer undergoing PICC (Peripherally Inserted Central Catheter) chemotherapy. **Methods:** From January 2017 to January 2020, 98 patients with breast cancer undergoing PICC chemotherapy in our hospital were divided into control group and study group by random sampling. The patients were given routine nursing and advanced nursing intervention on the basis of routine nursing. The psychological status, complications and quality of life of the patients were compared. **Results:** There was no significant difference in HAMA, HAMD score and QLQ-30 score before nursing ($P > 0.05$). The scores of HAMA and HAMD in the study group after nursing were lower than those in the control group ($P < 0.05$), the scores of QLQ-30 were higher than those in the control group ($P < 0.05$), and the complication rate was lower than that in the control group ($P < 0.05$). **Conclusion:** The intervention of advanced nursing mode in patients with breast cancer treated with PICC chemotherapy can effectively alleviate the influence of negative emotion on chemotherapy, reduce the occurrence of complications and improve the quality of life. This mode has high clinical value.

Key words: Advanced nursing; Breast cancer PICC; Catheterization chemotherapy; Quality of life; Complications

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Breast cancer is a common malignant tumor in clinical practice. It occurs in the mammary gland epithelial tissue of patients. It is a common disease in breast surgery and surgery. At the same time, this disease poses a great threat to women's health. It accounts for a high proportion of female malignant tumor diseases. The lesions will metastasize to the brain, lungs, liver and bone of patients. If the treatment is not timely, it will seriously threaten patients' life and safety^{1, 2}. In clinical practice, breast cancer should be treated as early as possible. For patients with this type of tumor, the sooner it is detected and the earlier it is treated, the safer it will be³. At present, breast cancer is mainly treated by surgical method,

drugs are more irritating to the blood vessels of patients. Therefore, peripheral venous catheter is often used

in clinical practice to place the catheter into central vein. Such operation can avoid injury of peripheral vein by chemotherapeutics. However, it is affected by multiple factors after catheterization, related complications are very easy to occur. Therefore, scientific and effective nursing intervention is very important^{4, 5}. The related research shows that⁶, according to the physical condition and disease characteristics of the patients, the advanced nursing intervention is predictable, which is not only the advanced nursing mode in this study, and the intervention

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radiochemotherapy and so on. Chemotherapy effect is ideal, but has high requirements for the

professional technology of medical staff, and the relevant nursing plan should be formulated according to the actual situation of the patients, and the intervention should be carried out. For this reason, this study focuses on the clinical value of advanced nursing mode.

DATA AND METHODS

General data

A total of 98 patients with breast cancer who received PICC chemotherapy between January 2017 and January 2020 in our hospital were randomly divided into control group and study group, with 49 patients in each group. Inclusion criteria: (1) Examination results of disease pathology showed breast cancer, tumor size could be measured, and all patients were treated with neoadjuvant chemotherapy of cis-platinum⁷. (2) Special personnel shall join in the nature of resources after introducing the study contents. Exclusion criteria: (1) Severe organ dysfunction including liver and kidney, myelosuppression, chemotherapy-related contraindication, possible distant metastasis on ultrasound examination before chemotherapy intervention. (2) Psychiatric disorders, mental disorders, confusion, inability to communicate. (3) Patients with incomplete study data, withdrawal or death during the study and poor compliance. The patients in the control group were 35-59 years old, mean age was (45.60 ± 1.40) years old, body weight was 45-64kg, mean weight was (52.10 ± 2.40) kg. YNM staging showed 29 cases of stage II and 20 cases of stage III. The patients in the study group were 35-60 years old, mean age was (45.50 ± 1.50) years old, body weight was 45-65kg, mean weight was (52.00 ± 2.50) kg. YNM staging showed 30 cases of stage II and 19 cases of stage III. The Ethics Committee of the hospital supervised the study, and there was no significant difference in the data of study objects ($P > 0.05$).

METHODS

The control group was given routine intervention. After admission, the medical staff gave the patient routine health education of breast cancer with PICC chemotherapy, including disease knowledge, PICC and relevant nursing

contents; simple psychological counseling was conducted, and necessary clinical care was given at the same time.

See the above paragraph for the content of routine intervention of the study group, and the content of advanced nursing is as follows:

Advance puncture intervention. Push the needle in an inclined way, it is feasible to advance a little bit while returning blood. These procedures are intended to minimize irritation during needle insertion and provide effective protection of the patient's vasculature. It is the key to ensure the success of PICC when selecting vessels scientifically and rationally. When selecting a vessel, choose a high-elastic and thick-shaped vessel that can be clearly seen in the superficial layers of the skin. Punctures were made as far as possible in vessels with multiple bifurcations. The delivery of the catheter is performed slowly and when the front end of the catheter is behind the patient's shoulder, it is required to place the chin as close to the ipsilateral shoulder as possible to allow the catheter to successfully reach the desired level. Catheter metrics must be prepared for positioning with the aid of imaging equipment. Observe the position of the catheter. During the operation, the transitional force shall be strictly prohibited, and the patient shall be informed to relax. If the stimulation is large, the patient's blood vessel will be contracted and other changes will occur, and the nurse shall immediately perform massage or hot compress treatment, so as to reduce the occurrence of catheter failure caused by overstress of patients. After catheterization, the relevant nursing work must be carried out in strict accordance with the requirements for aseptic operation and standard procedures. If there is oozing blood on the skin of puncture site, use gauze for compression treatment, and use elastic bandage for binding.

Advanced psychological intervention. In the clinical treatment, the patient will have negative mood such as anxiety and depression psychologically due to the reason of lack of sufficient understanding of the disease. In addition, it is also very easy to have abnormal behavior during the treatment. Unplanned extubation will occur when the condition is serious, which will

seriously affect the treatment. Therefore, before carrying out nursing intervention for patients, the medical staff shall actively communicate with the patients, explain the relevant conditions that may occur during the follow-up treatment and nursing, so as to alleviate their negative emotion, introduce successful cases of treatment for them, help the patients to establish treatment confidence and improve compliance, so that they actively cooperate with the clinical treatment and nursing work.

Advanced complications intervention. (1) Phlebitis intervention. Disposable puncture can effectively reduce the occurrence of phlebitis. Accurate selection of blood vessels can reduce the difficulty of operation. Dexamethasone is to be administered both at the start of the infusion and at the end of the infusion to reduce vascular irritation. When the patient is transfused, the nurse shall carefully make observation, pay attention to such problems as discomfort, oozing blood and blood return, and inform the patient to immediately report the infusion site to the medical staff if there is abnormality. When multiple chemotherapeutic drugs are used in combination, the least irritating chemotherapeutic drugs shall be infused firstly, and the drugs with excessive stimulation shall be infused with another chemotherapeutic drug at the beginning of the second infusion 20min later. In addition, the use of dexamethasone before and after chemotherapy can effectively avoid phlebitis. (2) Venous thrombus intervention. The medical staff shall clearly understand the clinical manifestations of pain, sensory disturbance and other symptoms of the patient's limbs, and then perform B-ultrasound examination. After diagnosis, the catheter shall be removed, the affected limb of the patient shall be elevated while the affected limb shall be kept warm, and cold compress and hot compress shall be strictly prohibited. During infusion, the operation shall not be performed on the affected limb. (3) Infection intervention. The incidence of infection after discharge was high, and the key points to avoid infection were to ensure sterile operation of PICC and to strengthen the intervention strength of catheter nursing, the patient was given detailed health education on the

eve of discharge, so as to improve the attention.

Observation indicators

Patient contrasting psychological status. The patients' psychological status was evaluated by HAMA and HAMD before and after nursing. A HAMD scale score of ≤ 7 represents a normal psychological condition, no anxiety, a score of 8-17 indicates possible anxiety, a score of 18-23 indicates anxiety, and a score of ≥ 24 indicates severe anxiety; a HAMA scale score of ≤ 7 indicates a normal psychological condition, no depression, a score of 7-13 indicates possible depression, and a score of ≥ 14 indicates severe depression. Higher scores on the HAMA and HAMD scales indicate more anxiety and depression.

Comparison of patient complications. Complications included catheter-related infection, catheter occlusion, catheter dislodgement, phlebitis, and thrombus.

Patient contrasting quality of life. Quality of life was assessed using the QLQ-30 scale before and after nursing. The QLQ-30 scale consists of 1 quality-of-life scale and 5 functional scales, which are divided into physical functioning, emotional well-being, role functioning, cognitive functioning, social functioning, 30 items per scale, an item score of 0 to 100 points, with higher scores indicating better quality of life.

Statistical analysis

All the data involved in this study were analyzed by SPSS 22.0 software, in which complications were detected by X² test, (%) test, mental status and quality of life were tested by t test ($\bar{x} \pm s$), and there was significant difference between them ($P < 0.05$).

RESULTS

Comparison of psychological status of patients

There was no significant difference in the scores of HAMA and HAMD before nursing ($P > 0.05$). The scores of HAMA and HAMD in the study group were lower than those in the control group after nursing ($P < 0.05$). See Table 1.

Comparison of patient complications

The complication rate in the study group was lower than that in the control group ($P < 0.05$). See Table 2.

Comparison of patient quality of life

No significant difference was found in pre-nursing QLQ-30 scores ($P > 0.05$), and after intervention, QLQ-30 scores of the study group were higher than those in the control group ($P < 0.05$), see Table 3.

DISCUSSION

At present, the domestic clinical research on the pathogenesis of breast cancer has not been completely specified. It is difficult to treat the disease and may be affected by multiple factors such as virus and estrogen⁸. Clinical symptoms of breast cancer patients mainly include nipple depression, breast lump, and skin edema, etc.⁹. In addition, affected by diseases, chemotherapy, etc., the patient's body immune function is poor, and it is easy to develop inflammatory reaction, venous infection and other related complications. The effect of catheterization is affected, resulting in a surge in clinical treatment and interference in therapeutic effect¹⁰. Therefore, it is necessary to give systematic and comprehensive nursing intervention during the PICC chemotherapy in patients with breast cancer to relieve injury and pain, reduce the occurrence of complications and improve the clinical efficacy¹¹.

After the onset of breast cancer, the intercellular connection will fall off, and the cancer cells will flow freely until spread to the whole body, which will seriously damage the human body. The psychological state of the patients will fluctuate greatly, which will bring about serious influence on the treatment and nursing work. Therefore, appropriate nursing intervention must be given in a timely manner to stabilize the disease and improve the quality of life of the patients¹². The data of this study showed that there was no significant difference in HAMA, HAMD score and QLQ-30 score before nursing ($P > 0.05$). After intervention, the scores of HAMA and HAMD in the study group were lower than those in the control group ($P < 0.05$), and the scores of QLQ-30 were higher than those in the control group (P

< 0.05). The results suggest that advanced nursing is effective in alleviating the negative emotional impact of patients and improving the quality of life. It is analyzed that compared with routine nursing, the advanced nursing is to evaluate the patient's status in an all-round way before chemotherapy, then to formulate the appropriate nursing plan for the patients according to the evaluation results and individual differences, and to improve the contents of nursing plan through continuous evaluation and summary. To analyze the predisposing factors of complications that may occur during PICC, and to target appropriate nursing intervention for complications that may occur, so as to effectively control and reduce the occurrence of complications. In addition, the occurrence of complications of breast cancer PICC chemotherapy is closely related to patient compliance, knowledge of catheterization, health education effect of medical staff and other subjective factors. Therefore, comprehensive assessment and monitoring of the patient's condition, strengthening sterile operation management, health education, psychological intervention and complication intervention can all improve the awareness and attention of the patient about the disease, relieve the mood fluctuation, enhance the self-care ability, and then improve the quality of life¹³.

The operation of PICC chemotherapy for breast cancer is simple and fast, the indwelling time of catheter is long, and the safety is high. However, if the relevant nursing work is not in place, complications are very likely to occur¹⁴. The data of this study showed that the complication rate of the study group was lower than that of the control group ($P < 0.05$). The results suggest that advanced nursing is equally effective in reducing the rate of complications. It is considered that advanced nursing refers to the problems that may occur during the PICC of breast cancer prospectively foreseen in the clinical nursing engineering, and corresponding accurate judgment should be made to carry out targeted nursing intervention so as to reduce the occurrence of complications. There are high requirements and standards for nursing work during catheterization. It is required that the medical staff should master

and apply the prevention and treatment knowledge and treatment skills related to catheter complication, be able to accurately predict and analyze the imminent problems, make in-depth optimization and standardization on the details of nursing operation, strictly follow the requirements for sterile operation to carry out catheter placement, and perform preventive nursing intervention so as to reduce the occurrence of complications^{15,16}.

In conclusion, the intervention of advanced nursing mode in patients with breast cancer treated with PICC chemotherapy can effectively alleviate the influence of negative emotion on chemotherapy, reduce the occurrence of complications and improve the quality of life. This mode has high clinical value.

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Table 1
Comparison of Clinical Efficacy of Patients (points, $\bar{x} \pm s$)

Group	Number of cases	HAMA score		HAMD score	
		Before nursing	After nursing	Before nursing	After nursing
Control group	49	12.85±6.10	9.95±3.85	12.89±3.78	9.08±3.00
Study group	49	12.82±6.08	4.90±1.06	12.90±3.80	4.58±1.06
t	/	0.024	8.852	0.013	9.900
P	/	0.981	0.000	0.990	0.000

Table 2
Comparison of Patient Complications (n, %)

Group	Number of cases	Catheter related infection	Catheter occlusion	Catheter detached	Phlebitis	Thrombus	Complications
Control group	49	2 (4.08%)	3 (6.12%)	3 (6.12%)	4 (8.16%)	3 (6.12%)	15 (30.61%)
Study group	49	1 (2.04%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (2.04%)	2 (4.08%)
X ²	/						12.028
P	/						0.000

Table 3.
Comparison of Patient Quality of Life (points, $\bar{x} \pm s$)

Group	Number of cases	Quality of life assessment		Physical functioning		Emotional well-being		Role functioning	Cognitive functioning		Social functioning		
		Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing	Before nursing	After nursing
Control group	49	41.25±2.89	50.05±3.15	45.24±2.90	55.45±2.20	41.55±2.18	52.35±3.12	42.53±2.20	51.52±3.20	41.20±2.24	53.21±3.04	40.20±2.25	54.51±2.30
Study group	49	41.26±2.90	72.14±3.85	45.23±2.93	69.85±3.00	41.53±2.20	70.12±3.45	42.54±2.22	71.22±3.48	41.22±2.25	71.03±3.15	40.19±2.27	74.13±2.35
t	/	0.017	31.085	0.017	27.095	0.045	26.742	0.022	29.169	0.044	28.495	0.022	41.767
P	/	0.986	0.000	0.986	0.000	0.964	0.000	0.982	0.000	0.965	0.000	0.983	0.000