

Observation on the Application Effect of Targeted Infusion Safety Nursing in Inpatients with Cancer

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Abstract: *Objective:* To study the clinical effect of targeted infusion safety nursing during infusion of inpatients with cancer. *Methods:* From January 1, 2020, to January 1, 2023, a total of 6,614 infusion patients were treated in The First Affiliated Hospital of Wenzhou Medical University, and 300 inpatients with cancer were selected as the research objects and randomly divided into the observation group and the control group, with 150 patients in each group. The control group received routine infusion nursing, and the observation group received targeted infusion safety nursing. The targeted infusion safety nursing was judged by comparing the nursing quality assessment, incidence of adverse events, patient compliance, and patients' mastery of infusion knowledge between the two groups. *clinical effect. Results:* After the targeted infusion safety nursing was given to the patients in the observation group, the patients in this group recognized the nursing quality, and the statistical score was higher than that in the control group; the incidence of adverse events in the observation group was lower than that in the control group. The compliance of the observation group was higher than that of the control group. The mastery of health knowledge in the observation group was also higher than that in the control group and the difference was statistically significant ($P < 0.02$). *Conclusion:* After implementing targeted infusion safety nursing for inpatients with cancer, it can effectively prevent the occurrence of adverse events, improve patient compliance, and increase the mastery of relevant knowledge of patients.

Keywords: Tumor patients; Infusion nursing; Targeted safety nursing; Adverse events

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1. Introduction

Treatment methods for tumor patients include chemotherapy, surgery, radiotherapy, etc., and infusion is one of the most common and necessary treatment methods ^[1]. Infusion is the process of drugs directly entering the body through intravenous injection to achieve therapeutic purposes. Its importance lies in enabling the drug to reach the body quickly, reducing the side effects of the drug, and improving the safety of treatment. Doctors need to formulate a reasonable treatment plan based on the actual condition of the patient, and determine the dosage and use time of the drug ^[2]. Patients and their families should understand the treatment plan and use the medicines exactly as prescribed by the doctor. Nurses need to choose the appropriate infusion caliber and speed according to the severity of the patient's disease and their own conditions. Generally speaking, the infusion rate should not be too fast or too slow, so as to avoid adverse reactions and weakening of drug efficacy ^[3]. Nursing care is very important for tumor patients who require

long-term infusion. Long-term infusion can alleviate the patient's symptoms to some extent and improve the therapeutic effect. But at the same time, it will also cause more adverse events, such as infection, venous inflammation, blood clots, etc., so professional nursing methods are needed to reduce the occurrence of adverse events^[4]. Conventional care methods are no longer meeting the actual needs of patients currently, thus care methods need to be improved. This study focuses on the clinical application effect of targeted infusion safety nursing in inpatients with cancer.

2. Materials and methods

2.1. General information

During the three years study, from January 2020 to January 2023, 6,614 patients underwent transfusion therapy at The First Affiliated Hospital of Wenzhou Medical University. Taking inpatients with cancer as the research object, 300 patients were randomly divided into the observation group and the control group, each group had 150 patients. In the control group, there were 82 males and 68 females, aged 45–63 years, with an average age of 50.21 ± 3.55 years, disease course 2–6 years, and mean disease course of 3.55 ± 1.05 years; the observation group had 90 males and 60 females, aged 48–66 years old, with an average age of 55.14 ± 5.22 years, disease course 3–8 years, and mean disease course 5.01 ± 1.02 years. Comparing the baseline information such as gender, age, and course of disease between the two groups, there was no statistical significance ($P > 0.05$).

Inclusion criteria included the research subjects were all inpatients with cancers who needed infusion therapy, and all patients in this study were informed and signed the informed consent.

Exclusion criteria included patients with underlying diseases of other organs and patients with mental disorders who cannot cooperate with treatment and follow-up investigations.

2.2. Methods

2.2.1. Control group

Routine care is given to patients in the control group. Specifically, in order to track and monitor the changes in the patient's condition, the basic information of the patient must be carefully checked with the drug name, measurement, and other information before the infusion to ensure that there will be no mistakes. During the infusion process, the infusion speed should be adjusted according to the characteristics of the drug, and the patient should be instructed to communicate in time if any discomfort occurs. After the infusion, the patient should rest for 15 minutes before performing other activities. In addition, nurses need to keep the infusion room clean and tidy and disinfect the environment on time.

2.2.2. Observation group

Targeted safety nursing care was implemented in the observation group, and the specific content was as follows:

- (1) Strictly implement an aseptic operation. Nurses need to wash their hands as well as wear masks and sterile gloves before infusion operations to ensure that they are not contaminated by bacteria during the infusion process.
- (2) Regularly replace the infusion tube. The infusion tube is a key part of the infusion. If it is not replaced for a long time, it may increase the risk of bacterial contamination, so it needs to be replaced regularly; before using the infusion port for infusion, blood needs to be withdrawn to ensure that the needle and catheter are in the right position to prevent leakage of the drug solution; patients should be instructed to avoid strenuous upper body exercises, and it is strictly forbidden to wipe the skin around the catheter vigorously during bathing.
- (3) Pay attention to the choice of infusion site. For patients with long-term infusion, it is necessary to

choose a suitable infusion site to avoid phlebitis and other complications.

- (4) Observe the infusion process. Nurses need to frequently observe the patient's infusion situation, and deal with abnormal situations in time, such as pipeline blockage, drip rate being too fast or too slow, etc.
- (5) Infusion quality control. Nurses need to control the quality of infusion to ensure the correctness, stability, and effectiveness of drug infusion, and avoid overdose or shortage of drugs.
- (6) Drug configuration and confirmation. Nurses need to configure the medicine correctly and confirm it to avoid errors during the infusion process. When using drugs, nurses should carefully read the drug instructions to understand the drug's function, usage, dosage, adverse reactions, and other information. For drugs that need to be blended, they should be diluted and blended according to the instructions. During the drug infusion process, nurses should carefully observe the condition of the drug, and stop the infusion in time if there is drug precipitation or foreign matter.
- (7) Monitor and deal with adverse drug reactions. Targeted infusion safety nursing not only ensures infusion safety but also needs to monitor the patient's physical state, and timely discovery of drug adverse reactions, to avoid aggravating the patient's condition.
- (8) Strengthen the publicity and education of patients' infusion-related knowledge. During the nursing process, patients should be regularly informed of the importance of infusion, as well as the self-supervision of the infusion port, so as to avoid the occurrence of adverse events such as infection of the puncture port due to the patient's own reasons. In addition, it is necessary to communicate more with patients, reduce the psychological pressure on patients, and actively respond to treatment.

2.3. Observation indicators

The observation indicators of this study are as follows:

- (1) The nursing quality assessment form was used to test the nursing situation of the two groups of subjects during the infusion of tumor patients in the hospital. The form contained five contents, including environmental quality, service attitude, operation skills, communication, and complication management, each of which contained multiple items. The maximum score of each item was 100 points, the higher the score, the higher the nursing quality of the content.
- (2) Statistics of adverse events occurred during the infusion of tumor patients in the hospital. The key items are three situations of blood withdrawal, catheter blockage, and infection, and the probability of occurrence of adverse events is compared $(\text{number of adverse events}/\text{total number of cases}) \times 100\%$.
- (3) Comparing the compliance of the two groups of cancer patients during hospital infusion, the survey method is a questionnaire survey, with a total score of 100 points, 90–100 points for complete compliance, 60–89 points for partial compliance, and less than 60 points for non-compliance. Compliance rate = complete compliance rate + partial compliance rate.
- (4) Through the questionnaire survey, the patient's mastery of health knowledge is tested. The content includes four major items: infusion knowledge, maintenance points, common drug reactions, and prevention of complications. The full score for each item is 100 points, the higher the score, the higher the mastery of knowledge.

2.4. Statistical methods

This study uses SPSS20.0 software for statistical analysis of data. The study includes two types of count data and measurement data. The former is expressed as a rate (%), and the chi-square value test is used. The latter is expressed as mean \pm standard value, and the *t*-value test is used. $P < 0.05$ indicated the difference between the groups is obvious and there is statistical significance.

3. Results

3.1. Comparing the evaluation of nursing quality between the two groups

Compared with the score indicators of infusion nursing quality, the observation group value of targeted safety nursing was higher than that of the control group ($P = 0.000$), see **Table 1** for details.

Table 1. Comparison of two groups of infusion nursing quality evaluation (points)

Group	Number of cases	Environmental Quality	Service attitude	Operational skills	Communication	Complications
Observation group	150	95.02 ± 2.87	96.07 ± 2.04	97.33 ± 2.54	95.28 ± 2.99	94.07 ± 3.21
Control group	150	82.04 ± 3.55	84.34 ± 3.17	88.22 ± 3.11	84.94 ± 3.47	82.54 ± 2.57
<i>t</i> -value		34.823	38.110	27.786	27.647	34.341
<i>P</i> value		0.000	0.000	0.000	0.000	0.000

3.2. The incidence of adverse events compared between groups

Through statistics, it can be seen that the number of adverse events in the observation group was lower than that in the control group ($P = 0.039$), see **Table 2** for details.

Table 2. Comparison of the incidence of adverse events between the two groups (n, %)

Group	Number of cases	Withdraw without blood	Catheter blockage	Infection	Total incidence
Observation group	150	2 (1.33)	1 (0.66)	1 (0.66)	4 (2.66)
Control group	150	4 (2.66)	2 (1.33)	6 (4.00)	12 (8.00)
χ^2					4.225
<i>P</i>					0.039

3.3. Comparing the compliance rate of the two groups of patients

Comparing the compliance of the two groups of patients during the nursing period, it can be seen from the statistics that the compliance of the observation group is higher than that of the control group ($P = 0.032$), see **Table 3**.

Table 3. Comparing the compliance rate of patients in the two groups (n, %)

Group	Number of cases	Full compliance	Partial compliance	Non-compliance	Compliance rate
Observation group	150	127 (84.66)	18 (12.00)	5 (3.33)	145 (96.66)
Control group	150	113 (75.33)	23 (15.33)	14 (9.33)	136 (90.66)
χ^2					4.551
<i>P</i>					0.032

3.4. Inter-group comparison of patients' mastery of healthcare knowledge

After carrying out different nursing methods on the two groups of patients, the patients' mastery of health knowledge was investigated. Through score calculation, it can be seen that the knowledge mastery of the patients in the observation group is higher than that of the control group ($P = 0.000$). For specific values, see **Table 4**.

Table 4. Comparing the mastery of nursing health knowledge between the two groups (points)

Group	Number of cases	Infusion knowledge	Nursing points	Complication prevention	Common drug reactions
Observation group	150	92.44 ± 3.11	90.24 ± 3.84	95.26 ± 3.37	94.19 ± 2.87
Control group	150	86.52 ± 4.33	81.33 ± 4.07	86.74 ± 3.91	86.07 ± 2.44
<i>t</i>		13.600	19.502	20.215	26.399
<i>P</i>		0.000	0.000	0.000	0.000

4. Discussion

Tumor diseases have shown a gradual upward trend. Whether it is a benign tumor or a malignant tumor, it will cause physical and psychological damage to the patient. Tumor diseases usually require a relatively long treatment. The common treatment methods are surgery, radiotherapy, chemotherapy, etc. However, regardless of the type of treatment plan, it is inseparable from the auxiliary application of infusion [5]. For inpatients with cancer, transfusion is a long-term process, which will cause a certain burden on the patient's body. In addition, the increase in medical expenses will also bring certain psychological pressure to the patient [6]. The medical staff needs to provide meticulous care to patients, provide psychological counseling and emotional support, and provide necessary life assistance and services. Health units are required to improve their medical services and nursing quality as well as ensure the quality of operators and equipment so that patients get sufficient care and face the treatment process with more confidence [7]. Tumor patients who need long-term infusion need to receive a variety of anticancer drugs. The most common drugs include chemotherapy drugs, targeted drugs, and immunotherapy drugs. However, long-term infusions also come with their own set of risks and discomforts. These risks include but are not limited to infection, allergic reaction, venous thrombosis, and drug side effects [8]. These adverse events not only increase the cost of treatment for patients but also prolong their hospital stay and slow down the progress of treatment. As a medical staff, it is necessary to have a comprehensive understanding of the patient's condition, including the patient's age, physical condition, tumor type, medication, etc., formulate a professional nursing plan, strictly implement various preventive measures such as wearing clean gloves and masks, regularly replacing infusion equipment, paying attention to the aseptic operation and quality management of infusion equipment and medicines, keeping the infusion channels clean and unimpeded, and strengthening indoor ventilation [9]. Medical staff should improve operation training to ensure correct nursing skills and prevent adverse events caused by operational errors. In addition, it is necessary to increase inspection efforts and regularly inspect the patient's infusion situation.

Inpatients with cancers need long-term infusions, and traditional infusion methods may cause discomfort such as pain and swelling. Targeted infusion safety care can choose the appropriate intravenous access and infusion method according to the specific situation of the patient, hence minimizing the occurrence of discomfort and making the patient feel more comfortable during the infusion [10]. This nursing method can also select appropriate equipment and materials according to the patient's condition and infusion needs, and strictly observe the patient to detect and deal with possible complications in time, leading to a reduction of the occurrence risk [11]. Targeted infusion care can adjust factors such as infusion frequency, infusion speed, and drug dosage according to the actual symptoms of the patient to ensure that the patient receives the most appropriate therapeutic effect. Compared with traditional infusion methods, targeted infusion safety care can more precisely control the infusion process, provide patients with more professional and personalized treatment plans, and improve the therapeutic effect [12]. For long-term hospitalized patients, the infusion needs to be assisted by infusion ports or PICC catheters, so it is emphasized that nurses should do a good job in safety care related to the pipeline, such as wearing special

patient clothing for the patient, so that the nurses can maintain the pipeline, reduce the risk of catheter displacement during infusion, which can improve the safety of the pipeline. Targeted care will also guide the patient's psychology, improve the patient's awareness of the infusion port or PICC catheter, help the patient eliminate tension and fear, and provide health guidance and psychological care.

In this study, inpatients with cancers in our hospital were selected as the research objects, and the clinical effects of different nursing methods were compared between the two groups. The data collected and sorted out showed that in terms of nursing quality assessment, the value of the observation group that implemented targeted infusion safety nursing was higher than that of the control group that adopted routine nursing methods, and the comparison between groups was significant ($P < 0.05$). In terms of the incidence of adverse events in the two groups, there were only 4 cases in the observation group, accounting for 2.66%, and 12 cases in the control group, accounting for 8.00%. Statistical analysis of compliance revealed the patients in the observation group were more able to obey the relevant instructions of the medical staff and cooperate with the follow-up treatment. Additionally, the patients in the observation group had better mastery of health knowledge than the patients in the control group, and the difference between the groups was obvious with statistical significance ($P < 0.05$).

To sum up, the clinical effect of targeted infusion safety nursing on inpatients with cancer is significant, effectively reducing the incidence of adverse events, improving patient compliance, enhancing patients' self-confidence, improving the overall quality of infusion care, helping patients with active treatment, as soon as possible recovery, worthy of clinical nursing promotion.

Disclosure statement

The authors declare no conflict of interest.

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