Effect of Nursing Intervention Based on Orem Self-care Theory on Peripheral Neuropathy in Patients with Breast Cancer Chemotherapy

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Abstract

Objective: To study the effect of nursing intervention based on Orem’s self-care theory on peripheral neuropathy in patients with breast cancer chemotherapy. Methods: A total of 60 patients with peripheral neuropathy caused by breast cancer chemotherapy treated in our hospital from May 2022 to July 2023 were selected and divided into the study group and control group by random number table method, with 30 cases in each group. The control group received routine nursing intervention, while the research group received nursing intervention based on Orem’s self-care theory. The control effect of peripheral neuropathy and psychological status before and after nursing were evaluated and compared between the two groups. Results: After nursing, the control effect of peripheral neuropathy in the study group was better than that in the control group, and the scores of all dimensions of the CD-RISC scale were higher than those in the control group, with statistical significance (P<0.05). Conclusion: Nursing intervention based on Orem’s self-care theory can effectively improve the control effect of peripheral neuropathy and improve the psychological status of patients with breast cancer chemotherapy.

Keywords

Orem self-protection theory, Breast cancer, Chemotherapy, Peripheral neuropathy, Effect

Malignant tumor is a common chronic disease in the world, the incidence of which has shown an increasing trend in recent years. Breast cancer is one of the most common malignant tumors. The occurrence of this disease is the result of the comprehensive effect of various factors such as environment, heredity, and habit, and generally has the characteristics of complex pathogenesis and difficult cure. Chemotherapy is a common treatment for breast cancer, which can effectively kill tumor cells and control the development of the disease. The safety of chemotherapy has always been the focus of medical attention [1, 2]. Some chemotherapeutic drugs will produce a special reaction, that is, chemotherapeut-induced peripheral neuropathy, which is related to drug-induced peripheral nerve injury [3, 4] and has a complex mechanism, resulting in a series of neurological disorders, such as fatigue, pain, numbness, etc. Some patients may suffer from loss of touch, neuropathic pain, nail discoloration, and other conditions [5, 6], and the symptoms of peripheral neuropathy caused by different chemotherapy drugs may also vary to some extent. If the toxicity accumulates, it can affect fine motor function and even lead to walking impairment. In recent years, our hospital has attached great importance to the optimization of nursing programs for patients with peripheral neuropathy caused by breast cancer chemotherapy. Orem’s self-care theory is a nursing model proposed by Orem to improve patients' self-care ability. It combines humanities, nursing, and other disciplines, and has achieved satisfactory results in regulating patients' health behaviors and playing a positive role in disease control [7]. Orem’s self-care
theory was introduced to patients with peripheral neuropathy caused by breast cancer chemotherapy in our hospital, and the application effect was satisfactory, as reported below.

1. Data and methods

1.1 General Information

Sixty patients with chemotherapy-induced peripheral neuropathy for breast cancer admitted to our hospital from May 2022 to July 2023, all female, aged 24-67 (44.29±6.52) years old, were randomly divided into study group and control group by random number table method, with 30 cases in each group. There was no statistical significance in the comparison of data between groups (P > 0.05).

1.2 Methods

1.2.1 Control group

Routine nursing was carried out, and the nursing work was mainly carried out around diagnosis and treatment activities, and basic nursing such as examination, medication, and health education was improved according to the doctor’s advice. Drug therapy or non-drug therapy for peripheral neuropathy was carried out according to the doctor’s advice, such as duloxetine, lidocaine patch, acupuncture, freezing, and compression therapy. According to the actual condition of the patient, the notes on daily diet, work and rest, activities, and other aspects are explained. Explain the main points of daily care to the family members of the patients, patiently answer the questions raised by the patients and family members during the nursing, and timely report to the doctor for treatment of abnormal conditions such as abnormal vital signs and abnormal examination indicators.

1.2.2 Study group

Nursing intervention based on Orem's self-care theory shall be implemented, specifically as follows:

(1) Diagnosis and treatment: Before nursing, the self-care ability of each case was assessed through the daily activity ability scale. A score of less than 40 was fully compensated nursing, a score of 41-60 was semi-compensated nursing, and a score of > 60 was supported education. According to patients’ actual condition and cultural background, appropriate health guidance methods are commonly used, such as face-to-face explanations, popular science videos, popular science lectures, health manuals, etc. During the nursing period, the appropriate way is selected to carry out health guidance around the cause, treatment, prognosis, and daily life precautions of peripheral neuropathy. Meanwhile, patients are encouraged to learn health knowledge independently through popular science videos and health manuals to improve health literacy.

(2) Design and planning: Through nursing conference discussion, literature review, and other methods, and combined with the characteristics of patients with different scoring ranges, the corresponding nursing plan was formulated. For those with scores less than 40 points, the monitoring of patients' vital signs should be strengthened, the participation of patients' family members should be encouraged in nursing, so that patients can obtain effective family support in diagnosis and treatment, and the importance of family intervention should be patiently explained to patients’ family members. Strengthen the health guidance of patients' family members in nursing. At the same time, through communication with patients' families, a timely understanding of disease burden guides patients to obtain effective social support when necessary and reduces the economic pressure on patients' families. Strengthen nutritional support during nursing. For those with scores of 41 to 60, guide patients to do a good job of symptom self-management, introduce local activities and exercise methods of hands and feet to patients, encourage patients to insist on long-term exercise, reduce the load of symptoms on the motor system and relieve the physical burden. Patients are encouraged to eat a balanced diet, eating a diet rich in specific nutrients, such as foods rich in vitamin B1, foods rich in protein, etc. Daily avoid contact with cold water and hot water, develop the habit of wearing gloves and socks, protect hands and feet, and strengthen heat preservation. Scores > 60, the implementation of diet, daily life precautions, and other diversified health guidance, diet can eat a moderate amount of warm food such as beef and mutton, fish, sea cucumber to supplement high-quality protein, eat lotus root, black fungus, walnut and bean products to supplement nerve repair active substances. Ask patients to keep sufficient light in life scenes to avoid blackening and falling, and install a handle in the bathroom to increase the safety factor. Guide patients to conduct appropriate training in guiding techniques such as Baduan Jin and Wuqin Xi. At the same time, the patient was instructed to take a warm water foot bath of about 40°C every day and perform acupressure to improve the blood circulation level at the end.
Implementation and adjustment: Real-time management is achieved through the establishment of online communication groups, and patients are encouraged to exchange personal experiences and feelings online. Medical professionals regularly answer questions and doubts for patients online to solve various problems encountered in daily life. At the same time, nurses can share cases with better prognosis to enhance patients' confidence. Through online communication and guidance, nurses can also more directly understand the health knowledge and problems needed by patients, so as to improve the pertinence of health guidance. Patient monitoring was strengthened in daily nursing, the assessment was conducted once a week, and the nursing plan was adjusted based on patient evaluation results for 2 months.

1.3 Observation indicators

1.3.1 Evaluation of the control effect of peripheral neuropathy
After nursing, the control effect is evaluated according to the improvement of symptoms and signs related to peripheral neuropathy of patients. Symptoms and signs basically disappear and daily life is basically not affected. For obvious effect, significant improvement is effective, and the improvement is not significant or even aggravated.

1.3.2 Psychological status assessment
The psychological status of patients was assessed using the Connor-Davidson Resilience Scale (CD-RISC), which was compiled by YU et al. The scale contained 25 items in three dimensions, namely optimism, strength, and resilience. The score was 0 to 4 points, and the total score was 100 points. The higher the score, the higher the level of mental resilience and the Cronbach's α coefficient of this scale was 0.910, indicating good reliability and validity.

1.4 Statistical methods
SPSS23.0 statistical software was used for processing, measurement data were expressed as ( x ± s ), comparison was performed by t-test, and P < 0.05 was considered statistically significant.

2. Result

2.1 Comparison of the control effect of peripheral neuropathy between the two groups (Table 1)

<table>
<thead>
<tr>
<th>Group</th>
<th>Remarkable</th>
<th>Effective</th>
<th>In vain</th>
<th>Total effective rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>research team/30</td>
<td>15 (50.00)</td>
<td>13 (43.33)</td>
<td>2 (6.67)</td>
<td>28 (93.33)</td>
</tr>
<tr>
<td>control group/30</td>
<td>9 (30.00)</td>
<td>13 (43.33)</td>
<td>8 (26.67)</td>
<td>22 (73.33)</td>
</tr>
<tr>
<td>χ²</td>
<td></td>
<td></td>
<td></td>
<td>4.320</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>0.038</td>
</tr>
</tbody>
</table>

2.2 Comparison of mental resilience before and after nursing between the two groups (Table 2)

<table>
<thead>
<tr>
<th>Group</th>
<th>Optimism (points)</th>
<th>Strength (points)</th>
<th>Tenacity (points)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-care</td>
<td>Aftercare</td>
<td>Pre-care</td>
</tr>
<tr>
<td>research team/30</td>
<td>16.59±2.38</td>
<td>24.12±3.11*</td>
<td>15.60±3.24</td>
</tr>
<tr>
<td>control group/30</td>
<td>15.94±3.03</td>
<td>20.87±2.74*</td>
<td>16.12±3.91</td>
</tr>
<tr>
<td>t</td>
<td>0.924</td>
<td>4.295</td>
<td>0.561</td>
</tr>
<tr>
<td>P</td>
<td>0.359</td>
<td>&lt;0.001</td>
<td>0.577</td>
</tr>
</tbody>
</table>

Note: Compared with before nursing,*P < 0.05

3. Discussion

Peripheral neuropathy induced by chemotherapy is a common dose-limiting adverse reaction in patients with chemotherapy. Patients with this disease mainly show symptoms such as paresthesia, motor abnormalities, and autonomic
nerve abnormalities, such as sensitivity to stimulation, burning, temperature change, muscle spasm or tremor, constipation, orthostatic hypotension, etc. [8], which will seriously affect the normal life of patients with breast cancer chemotherapy. Increase physical and mental burden [9, 10]. Some chemotherapy-induced peripheral neuropathy can be reversed, and some patients will turn into chronic neurological adverse reactions, lasting for many years or even a lifetime. Docetaxel is a common chemotherapy agent that causes peripheral neuropathy, and about 42% of breast cancer patients still have peripheral neuropathy symptoms two years after receiving chemotherapy with Docetaxel. Some patients even have peripheral neuropathy 6 years after chemotherapy. Clinical intervention for chemotherapy-induced peripheral neuropathy is mainly drug and non-drug treatment, in which drug treatment generally adopts local drug, patch, and gel preparation intervention to relieve patients' local neuropathic pain, and patients with local drug use generally have high tolerance. Non-drug treatment mainly includes acupuncture and physical factor therapy, which have outstanding efficacy and safety.

During diagnosis and treatment, it was found that in a series of repetitive diagnosis and treatment activities such as examination, treatment, and examination after diagnosis, patients with malignant tumors were prone to more significant mental health problems, which affected treatment compliance, and poor mentality would also increase the risk of poor prognosis. A qualitative study on the negative emotions of persistent cervical high-risk HPV patients [11] showed that anxiety, depression, and other negative emotions were mainly related to a variety of factors, such as worries about the uncertain prognosis, lack of knowledge about the disease and health, heavy financial burden after diagnosis, and changes in comfort level. Improving the mental health status of patients with malignant tumors through effective measures is an increasingly important content in related nursing work. This study analyzed the application effect of nursing intervention based on Orem's self-care theory in patients with peripheral neuropathy caused by breast cancer chemotherapy, and the results showed that the control effect of peripheral neuropathy in patients in the study group was better than that in the control group, and the scores of all dimensions of the CD-RISC scale after nursing were higher than those in the control group, with statistical significance (P < 0.05).

Orem’s self-care theoretical nursing is a relatively new nursing model. After assessing the self-care situation of nursing objects, it identifies the existing self-care defects and implements targeted interventions to achieve the balance between self-care ability and self-care needs of individuals [12]. Patients with peripheral neuropathy caused by breast cancer chemotherapy are prone to anxiety, panic, and other negative emotions in the face of treatment pressure and uncertain prognosis. Routine nursing services attach importance to disease treatment and often ignore the inner pressure of patients. In nursing intervention based on Orem's self-care theory, the individual situation was assessed by a daily activity ability scale and targeted care was given according to individual differences of patients. In nursing work, family support is the key content, the relevant nursing work can alleviate the psychological trauma of patients through targeted regulation, and provide a good psychological basis for disease control and improvement. In the diagnosis and treatment work, it is found that patients' awareness of the cause of disease and treatment methods is generally low, and there are even wrong understandings, which will affect patients' cooperation with treatment. Therefore, professional health guidance can effectively improve patients' correct understanding of the disease and improve treatment compliance. In the context of the increasing popularity of the Internet, continuous management through online groups can enable patients to obtain professional management and guidance and standardize their behavior. At the same time, the communication between patients and the encouragement of similar cases can alleviate the psychological pressure on patients. Family is the backing of patients, and the support and encouragement from family after illness can effectively enhance patients' health beliefs, improve treatment compliance, and guarantee the prognosis.

4. Conclusion

In summary, nursing intervention based on Orem's self-care theory for peripheral neuropathy patients with breast cancer chemotherapy can improve the disease control effect and improve the level of psychological resilience.

Funding

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