The Role and Safety of Personalized Care in Improving Thrombocytopenia after Lymphoma Chemotherapy

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Abstract: Objective: To explore and analyze the effect and safety of personalized nursing in improving thrombocytopenia after lymphoma chemotherapy. Methods: 80 lymphoma patients with thrombocytopenia after lymphoma chemotherapy in the Department of Hematology of our hospital from May 2021 to May 2023 were selected as the research objects, and they were divided into an experimental group and reference group by random drawing, with 40 cases in each group. The experimental group received individualized nursing, and the reference group received routine nursing. The platelet count, platelet-related indicators, incidence of adverse reactions, and life scores were compared between the two groups. Results: Before the intervention, there was no significant difference in platelet count between the groups (P > 0.05); after the intervention, the platelet count in the experimental group was significantly higher compared to the reference group (P < 0.05). In the experimental group, the duration for platelet decline and the time for platelets to normalize were notably shorter compared to the reference group (P < 0.05). Moreover, the personality group displayed a significantly lower incidence of adverse reactions than the reference group (P < 0.05). Prior to the intervention, there were no statistically significant differences (P > 0.05) in the life scores between the two groups, such as functional condition, symptom manifestation, and health scores among the groups. However, post-intervention, the personality group exhibited a significant improvement in those scores compared to the reference group (P < 0.05). Conclusion: Individualized nursing can optimize the platelet level in thrombocytopenia after lymphoma chemotherapy, improve symptoms, and reduce the occurrence of adverse reactions.

Keywords: Individualized care; Lymphoma chemotherapy; Thrombocytopenia; Safety; Effect

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1. Introduction

Lymphoma is a tumor that occurs in the lymph. Lymph nodes and lymphoid tissues are widely distributed, so the disease can occur in any part of the body, and its symptoms are also very diverse \[^{1,2}\]. Lymphoma is a malignant tumor, and it is usually treated by chemotherapy. Chemotherapy drugs are harmful to a certain extent and might cause some adverse reactions. Thrombocytopenia is a relatively common adverse reaction \[^{3,4}\]. Thrombocytopenia is a condition in which the blood platelet content is lower than normal, leading to skin and mucous membrane bleeding. Nursing interventions for thrombocytopenia in lymphoma patients during chemotherapy can improve prognosis. Personalized nursing, based on individual patient needs, tailors nursing plans and targeted measures accordingly \[^{7}\]. This article aims to study and analyze the effect and safety of personalized nursing in improving thrombocytopenia after lymphoma chemotherapy.

2. General information

Eighty patients with thrombocytopenia after lymphoma chemotherapy who were treated in the Department of Hematology of our hospital from May 2021–May 2023 were taken as research objects for this study. The patients were divided into an experimental group and a reference group by random drawing, 40 cases in each group. There were 21 males and 19 females in the experimental group, aged 24–65 years (average age: 44.29 ± 1.35 years old). There were 22 males and 18 females in the experimental group, aged 24–65 years (average age: 44.42 ± 1.16 years old). There was no statistically significant difference \(P > 0.05\) in the general information between the groups.

Inclusion criteria: (1) Diagnosed with thrombocytopenia after chemotherapy for lymphoma; (2) no mental illness; (3) compliant.

Exclusion criteria: (1) Presence of coagulation abnormalities, (2) history of cardiovascular and cerebrovascular diseases. (3) organ failure.

3. Methods

The reference group received routine nursing, where the changes in the patient’s condition was observed, and the patients were given instruction in terms of medication and diet.

Individualized nursing: (1) Disease education: the background of the patients were understood and the severity of the disease was assessed. Then, the patients were educated on chemotherapy, the adverse reactions after chemotherapy, and the diagnosis and treatment of thrombocytopenia, so that they have a correct understanding of the disease. (2) Emotional management: Patients are prone to negative emotions in the face of malignant tumors, chemotherapy, and complications. Therefore, they were given some consolation and encouragement so that they can face the disease optimistically. (3) Bleeding intervention: Thrombocytopenia can cause skin and mucous membrane bleeding. Therefore, the patient’s skin and mucous membrane conditions were assessed. Patients with bleeding signs were told to rest in bed and their skin and mucous membrane conditions were monitored. The use hot towels or hot water bottles was prohibited. Heat was applied to the skin, and the patients were given a light diet with more fruits and vegetables. For patients with constipation, cathartic drugs can be given appropriately to prevent bleeding caused by defecation. (4) Anti-infection measures: Chemotherapy can weaken patients’ immunity, increasing the infection risk. Therefore, prevention measures were taken, which involved cleaning the patient’s skin, respiratory tract, oral cavity, and perianal area. The patients were given a potassium permanganate sitz baths after defecation. Besides, strict sterile techniques were followed during nursing procedures to minimize the possibility of an infection. (5) Platelet transfusion:
The activity of platelets can be maintained in vitro for 7 days. In cases where immediate transfusion was not possible, storage in a controlled environment was necessary, with intermittent shaking every five minutes to preserve platelet function. Before infusion, gentle shaking was advised to prevent platelet structure damage, and the infusion was recommended to be completed within 60 minutes.

3.1. Observation indicators
(1) Platelet counts.
(2) Platelet-related indicators: time taken for the platelets to decrease to the desired level.
(3) The incidence of adverse reactions, including nausea and vomiting, chest tightness, skin ecchymosis, and infection.
(4) Scores for functional conditions, symptom manifestations, and health, ranging from 0 to 100 points.

3.2. Statistical analysis
SPSS 21.0 was used to process and analyze the data, the count data were expressed by the number of cases (n) and percentage (%), the $x^2$ test was implemented, the measurement data were expressed by the mean ± standard deviation, and the t test was implemented, ($P<0.05$) were considered statistically significant.

4. Results
4.1. Comparison of platelet counts between the experimental group and reference group
Before the intervention, there was no statistically significant difference in platelet count between the groups ($P>0.05$); after the intervention, the platelet count in the experimental group was higher than that in the reference group ($P<0.05$), and the difference was statistically significant. See Table 1 for details.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Before intervention</th>
<th>After intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>40</td>
<td>44.28 ± 4.61</td>
<td>119.27 ± 8.64</td>
</tr>
<tr>
<td>Reference</td>
<td>40</td>
<td>44.38 ± 4.69</td>
<td>105.42 ± 7.32</td>
</tr>
</tbody>
</table>

$x^2$ - 0.0961 7.7353
$P$ - 0.9236 0.0000

4.2. Comparison of platelet-related indicators between the experimental group and the reference group
The duration of platelet reduction in the personality group and the time for the platelets to reach the standard were significantly lower than those in the reference group ($P<0.05$), and the difference was statistically significant. See Table 2 for details.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Thrombocytopenia duration</th>
<th>Platelets up to standard all time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>40</td>
<td>4.18 ± 1.24</td>
<td>7.61 ± 2.51</td>
</tr>
<tr>
<td>Reference</td>
<td>40</td>
<td>6.37 ± 1.55</td>
<td>12.96 ± 2.27</td>
</tr>
</tbody>
</table>

$x^2$ - 6.9778 9.9982
$P$ - 0.9236 0.0000
4.3. Comparison of the incidence of adverse reactions between the personality group and the reference group

The incidence of adverse reactions in the personality group was significantly lower than that in the reference group ($P < 0.05$), and the difference was statistically significant (Table 3).

Table 3. The incidence of adverse reactions between groups is compared as follows ($n$ [%])

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Nausea and vomiting</th>
<th>Chest tightness</th>
<th>Skin ecchymosis</th>
<th>Infection</th>
<th>Total incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>40</td>
<td>2 (5.00)</td>
<td>0 (0.00)</td>
<td>1 (2.50)</td>
<td>1 (2.50)</td>
<td>4 (10.00)</td>
</tr>
<tr>
<td>Reference</td>
<td>40</td>
<td>4 (10.00)</td>
<td>2 (5.00)</td>
<td>3 (7.50)</td>
<td>3 (7.50)</td>
<td>12 (30.00)</td>
</tr>
</tbody>
</table>

$x^2$ - - - - - 5.0000  
$P$ - - - - - 0.0253

4.4. Comparison of life scores between groups

Before the intervention, there was no statistically significant difference ($P > 0.05$) in the life scores such as functional conditions, symptom manifestations, and health score among the groups. After the intervention, the life scores of the personality group were significantly better than in the reference group ($P < 0.05$), as shown in Table 4.

Table 4. Comparison of life scores between groups (mean ± standard deviation)

| Group         | Number of cases | Functional situation | | | Symptoms | | | Fitness level |
|---------------|-----------------|----------------------| | | Before | After | Before | After | Before | After |
| | before | intervention | intervention | Before | intervention | After | intervention | Before | intervention | After | intervention |
| Experimental  | 40              | 69.21 ± 5.28         | 82.67 ± 5.64 | 65.27 ± 5.55 | 80.24 ± 5.67 | 66.27 ± 5.31 | 82.57 ± 5.29 |
| Reference     | 40              | 69.36 ± 5.33         | 72.51 ± 5.94 | 65.43 ± 5.69 | 70.33 ± 5.24 | 66.52 ± 5.41 | 73.21 ± 5.29 |

$x^2$ - 0.1264 7.8448 0.1273 8.1181 0.2085 7.9353  
$P$ - 0.8997 0.0000 0.8990 0.0000 0.8353 0.0000

5. Conclusion

Lymphoma, a malignant lymphatic tumor, can infiltrate various human organs and typically presents with prominent symptoms such as weight loss, night sweats, and fever. There are two types of lymphoma: Hodgkin’s lymphoma and non-Hodgkin’s lymphoma, among which Hodgkin’s lymphoma has a very good prognosis and is a curable tumor. Chemotherapy is the main method to treat this disease, but it can cause adverse reactions, with thrombocytopenia being one of them. Once thrombocytopenia occurs in chemotherapy patients with lymphoma, the treatment of the disease will be delayed. Some patients need to prolong the time of chemotherapy, and some patients need to terminate chemotherapy. The prevention and treatment of thrombocytopenia are very important. Proper nursing can control thrombocytopenia to a certain extent and improve the prognosis of lymphoma patients with chemotherapy. In order to provide patients with a better clinical nursing experience, the nursing model is constantly updated and improved. Personalized nursing is a relatively popular nursing model. Basic nursing measures are used as the cornerstone, and nursing measures are optimized on this basis. Different patients have different needs and conditions. Therefore, the nursing plan should be adjusted according to the condition of the patient. In this way, thrombocytopenia due to lymphoma chemotherapy can be better treated and controlled.
To sum up, the platelet count of patients with thrombocytopenia after chemotherapy for lymphoma can recover to a certain extent through individualized nursing. Besides the occurrence of adverse reactions can be reduced, thus improving the patient’s quality of life. Therefore, individualized nursing program should be popularized in clinical practices.

Disclosure statement
The authors declare no conflict of interest.

References


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