Proceedings of Anticancer Research, 2022, Volume 6, Issue 4
http://ojs.bbwpublisher.com/index.php/PAR
ISSN Online: 2208-3553
ISSN Print: 2208-3545

# Using Pegaspargase in Combination with Chemotherapy in the Treatment of Lymphoma

**Yudi Miao***

Department of Hematology, Shaanxi Provincial People's Hospital, Xi'an 710068, Shaanxi Province, China

***Corresponding author:** Yudi Miao, miaoyudi26@163.com



**Abstract:** *Objective:* To analyze the clinical effect of pegaspargase combined with chemotherapy on patients with lymphoma. *Methods:* Seventy patients with lymphoma admitted to Shaanxi Provincial People's Hospital between December 2020 and June 2021 were selected as study subjects and were equally divided into the control group and the intervention group using the lottery method, with 35 cases in each group; the control group received conventional treatment, while the intervention group received pegaspargase combined with chemotherapy. The treatment satisfaction, quality of life, psychological status, and incidence of adverse reactions of the patients in the two groups were compared. *Results:* The differences in the indicators between the two groups were statistically significant ($p < 0.05$). *Conclusion:* Pegaspargase combined with chemotherapy can effectively improve the treatment effect and satisfaction of lymphoma patients; hence, it is worthy of promotion in clinical treatment.

**Keywords:** Pegaspargase combined with chemotherapy; Conventional treatment; Lymphoma

***Online publication:*** July 27, 2022

## 1. Case study

Lymphoma is a malignant tumor originating from the lymphatic system. Lymphomas can be grouped into Hodgkin's lymphoma or non-Hodgkin's lymphoma. Clinically, painless enlargement of lymph nodes is the main feature, and examination would reveal liver and spleen enlargement, along with symptoms of fever and anemia in the late stage. Chemotherapy is the mainstay of treatment in lymphoma, and it can cure lymphoma in some patients [1-4]. Several studies have shown that the use of pegaspargase in combination with chemotherapy is clinically effective in the treatment of lymphoma [5-8]. In this study, 70 patients with lymphoma admitted to Shaanxi Provincial People's Hospital between December 2020 and June 2021 were used as study subjects. The main objective of the study was to investigate the treatment effect of pegaspargase combined with chemotherapy on patients with lymphoma.

## 2. Materials and methods

### 2.1. General information

Seventy patients with lymphoma admitted to Shaanxi Provincial People's Hospital between December 2020 and June 2021 were selected as study subjects and divided into two groups using the lottery method. Thirty-five patients in the control group were treated with conventional treatment, while the other 35 patients in the intervention group were treated with pegaspargase in combination with chemotherapy. There were 19 male patients and 16 female patients in the control group, age ranging from 46 to 78, with a mean age of 58.85 ± 1.84. In the intervention group, the patients aged 48 to 76, with a mean age of 59.65 ± 1.93,

of whom 20 were male and 15 were female. The differences in the general information, including age and gender, between the two groups were not statistically significant ($p > 0.05$) and were comparable. This study was approved by the Ethics Committee of Shaanxi Provincial People's Hospital, and the patients and their families were informed of the study and signed the informed consent form.

### 2.2. Methods

Both groups were treated with oxaliplatin (Qilu Pharmaceutical [Hainan] Co., Ltd., Guodianzhi H20093168) at a dose of 130 mg/m$^2$ in 250–500 ml 5% glucose solution for 2–6 hours; gemcitabine (Jiangsu Haosen Pharmaceutical Group Co., Ltd., Guodianzhi H20030104) at a dose of 1000 mg/m$^2$ intravenously once a week for three weeks, followed by a one-week break, and repeated every four weeks; dexamethasone (Guangdong Nanguo Pharmaceutical Co., Ltd., GMP H44024618) at a dose of 0.75–3.00 mg (1–4 tablets) once for adults, two to four times a day.

(1) In the control group, L-asparaginase for injection (Kyowa Hakko Kogyo Co., Ltd., H20090520) was administered intravenously at a dose of 50-200 KU per kg body weight on 1 day or every other day. It was increased or decreased as appropriate for age and systemic status.
(2) The intervention group was treated with pemesterase in combination with chemotherapy: pemesterase (Jiangsu Hengrui Pharmaceutical Co., Ltd., H20153215) 2500 IU/m$^2$, administered intramuscularly every 14 days.

### 2.3. Observed indicators

(1) The patients were surveyed using a self-made satisfaction questionnaire with a total score of 100, with very satisfied being 80-100, satisfied being 60-79, and unsatisfied being 59 or less; satisfaction = (very satisfied + satisfied)/total*%.
(2) The Self-Rating Depression Scale (SDS) was used to rate the depression of the two groups, with 20 items in total, 4 points each, and a cut-off score of 53. The Self-Rating Anxiety Scale (SAS) was used to rate the anxiety of patients, with 20 items in total, 4 points each, and a cut-off score of 50, above which anxiety was indicated; the lower the score, the better a patient's psychological state.
(3) The Generic Quality of Life Inventory-74 (GQOL-74) was used to assess the quality of life of both groups, including physical, psychological, somatic, and social aspects; the total scores were compared.
(4) The incidence of adverse reactions, including hyperglycemia, gastrointestinal reactions, and granulocytopenia, was compared between the two groups.

### 2.4. Statistical analysis

SPSS 20.0 was used to process the data; t-test was performed on the data obtained and expressed as s, while $X^2$ test was performed on the count data and expressed as %. $p < 0.05$ was considered statistically significant.

## 3. Results

### 3.1. Patient satisfaction

The difference in patient satisfaction between the intervention and control groups was statistically significant ($p < 0.5$), as shown in **Table 1**.

**Table 1.** Comparison of patient satisfaction between the two groups (n/%)

| Group | Number of cases | Very satisfied | Satisfied | Unsatisfied | Satisfaction |
|---|---|---|---|---|---|
| Intervention group | 35 | 34 (97.14) | 0 (0.00) | 1 (2.86) | 34 (97.14) |
| Control group | 35 | 21 (60.00) | 7 (20.00) | 7 (20.00) | 28 (80.00) |
| $X^2$ | | | | | 5.0806 |
| *p* | | | | | 0.0242 |

### 3.2. Mental state

There was no significant difference in the SAS and SDS scores between the two groups before treatment ($p > 0.05$), and they both improved significantly after treatment ($p < 0.05$). The data comparison between the two groups showed that the SAS and SDS scores of patients in the intervention group were significantly lower than those in the control group ($p < 0.05$), and the difference between the groups was statistically significant (**Table 2**).

**Table 2.** Comparison of SAS and SDS scores before and after treatment (n = 35, ± s)

| Group | Number of cases | SAS | | SDS | |
|---|---|---|---|---|---|
| | | Pre-treatment | Post-treatment | Pre-treatment | Post-treatment |
| Control group | 35 | 50.55 ± 2.26 | 43.63 ± 0.57 | 49.35 ± 2.65 | 42.26 ± 0.03 |
| Intervention group | 35 | 50.35 ± 1.58 | 30.42 ± 0.18 | 49.35 ± 2.52 | 33.67 ± 0.53 |
| t | | 0.4291 | 130.7436 | 0.0000 | 95.7319 |
| *p* | | 0.6692 | 0.0000 | 1.0000 | 0.0000 |

### 3.3. Quality of life

Before treatment, there was no significant difference in the physical, psychological, somatic, and social scores between the two groups ($p > 0.05$); however, after treatment, the physical, psychological, somatic, and social scores of the patients in the intervention group were significantly higher than those of the control group ($p < 0.05$), and the difference was statistically significant (**Table 3**).

**Table 3.** Comparison of quality-of-life scores before and after treatment (n = 35, ± s)

| Group | Number of cases | Physical life | | Somatic functions | |
|---|---|---|---|---|---|
| | | Pre-treatment | Post-treatment | Pre-treatment | Post-treatment |
| Control group | 35 | 83.55 ± 2.26 | 87.63 ± 2.57 | 81.35 ± 3.65 | 86.26 ± 3.03 |
| Intervention group | 35 | 83.35 ± 2.58 | 90.42 ± 2.18 | 80.35 ± 2.52 | 91.67 ± 2.53 |
| t | | 0.3450 | 4.8978 | 1.3338 | 8.1082 |
| *p* | | 0.7312 | 0.0000 | 0.1867 | 0.0000 |
| **Group** | **Number of cases** | **Social functions** | | **Psychological functions** | |
| | | **Pre-treatment** | **Post-treatment** | **Pre-treatment** | **Post-treatment** |
| Control group | 35 | 80.55 ± 3.26 | 87.63 ± 2.57 | 79.35 ± 2.65 | 86.26 ± 2.03 |
| Intervention group | 35 | 81.35 ± 2.58 | 91.42 ± 2.18 | 80.35 ± 3.52 | 91.67 ± 2.53 |
| t | | 1.1384 | 6.6533 | 1.3427 | 9.8670 |
| *p* | | 0.2589 | 0.0000 | 0.1838 | 0.0000 |

### 3.4. Incidence of adverse reactions

The incidence of hyperglycemia, gastrointestinal reactions, and granulocytopenia was significantly lower in the intervention group than in the control group ($p < 0.05$), as shown in **Table 4**.

**Table 4.** Comparison of adverse reactions in the two groups (n, %)

| Group | Number of cases | Hyperglycemia | Gastrointestinal reactions | Granulocytopenia | Incidence rate |
|---|---|---|---|---|---|
| Intervention group | 35 | 1 | 0 | 0 | 1 (2.86) |
| Control group | 35 | 3 | 1 | 2 | 6 (17.14) |
| $X^2$ | | | | | 3.9683 |
| *p* | | | | | 0.0464 |

## 4. Discussion

Lymphoma can be caused by a number of factors. Most patients are affected by viral infections, mainly related to EBV infection, which is one of the main causes of Hodgkin's lymphoma [9-14]; others are affected by retroviral infections, which can cause lymphoma as well as t-cell leukemia. There is also a strong relationship between lymphoma and individual immune factors, with a higher incidence of disease in cases of immune deficiencies [15,16]. The systemic symptoms of malignant lymphoma vary widely depending on the type of disease and the time of onset. Some patients may have no systemic symptoms [17-19]. Fever, weight loss (more than 10% weight loss), and night sweats are the most common symptoms, followed by loss of appetite, fatigue, and pruritus. Systemic symptoms are related to age of onset, extent of the tumor, and the body's immunity. Systemic symptoms are significant in elderly patients, those who are immunocompromised, or patients with multiple focal attacks [20]. The survival rate of patients without systemic symptoms is three times higher than that of patients with symptoms. In terms of management, surgery is superior to conventional chemotherapy, as the latter has significant side effects and can be very disruptive or damaging. In the current study, pegaspargase combined with chemotherapy was found effective in treating lymphoma.

In conclusion, by using pegaspargase combined with chemotherapy for lymphoma patients, it can effectively improve the treatment effect and psychological state of patients; thus, it is worthy of promotion in clinical practice.

## Disclosure statement

The authors declare no conflict of interest.

## References


[1] Liu CC, Zhang JY, Xiong CL, et al., 2020, Effect of Pemesterase on Coagulation Function and Relapse Rate in Patients with Lymphoma. Laboratory Medicine and Clinics, 17(14): 2075–2077.

[2] Zu L, Zhou J, Zhang GL, et al., 2020, Three Cases of Relapsed/Refractory T-Cell Lymphoma/Leukemia Treated with Decitabine in Combination with Chemotherapy and Review of the Literature. Journal of Clinical Hematology,33(3): 211–214.

[3] Lu B, 2021, Effectiveness of Dasatinib Combined with Pemantase Chemotherapy Regimen in the Treatment of Patients with Ph-Positive Acute Lymphoblastic Leukemia. Chinese and Foreign Medical Research, 19(25): 138–140.

[4] Yang J, Yan H, Chai L, et al., 2020, Effect of SMILE Regimen on Coagulation Function in Patients with NK/T-Cell Lymphoma. China Drugs and Clinics, 20(23): 3931–3933.

[5] Hu L, Xia M, Li GQ, et al., 2020, Clinical Observation of P-GEMOX Regimen for the First-Line Treatment of Primary Extranasal NK/T-Cell Lymphoma. Leukemia & Lymphoma, 29(3): 160–164.

[6] Chen X, Chen X, Xu G, 2020, Nursing Experience of Sindilizumab Combined with Pemantase, Anrotinib in the Treatment of Primary NK/T-Cell Lymphoma. Chinese and Western Medicine Nursing, 6(10): 285–287.

[7] Han X, 2021, Evaluation of Pemesterase Combined with GEMOX Chemotherapy Regimen in the Treatment of NK/T-Cell Lymphoma. Contemporary Medicine Series, 19(17): 69–71.

[8] Xia C, 2020, Impact of Remission Status After Induction Chemotherapy for Early-Stage Nasal NK/T-Cell Lymphoma on Survival with Combination Therapy. South China University.

[9] Wang S, Pan X, Qi Y, 2020, Meta-Analysis of Pepmonidase and Levomucoidase in the Treatment of Acute Lymphoblastic Leukemia in Chinese Children. Journal of Shenyang Medical College, 22(3): 251–255.

[10] Zhang J, 2021, Analysis of the Effect of Pemesterase Injection on the Chemotherapeutic Effect of NKT Lymphoma. Clinical Research, 29(3): 78–79.

[11] Zhang Z, 2021, Efficacy and Safety Analysis of Pemantase in the Treatment of Extranodal NK/T-Cell Lymphoma. Chinese Community Physicians, 37(24): 59–60.

[12] Sun Y, Lou ZS, 2020, Meta-Analysis of Pemesterase in the Treatment of Extranodal NK/T-Cell Lymphoma. Journal of Mudanjiang Medical College, 41(3): 59–65.

[13] Wang J, Huang G, Cui K, 2020, Effect of Pemesterase on Lipid Levels in Patients with Extranasal NK/T-Cell Lymphoma. Shaanxi Medical Journal, 49(4): 481–484.

[14] Wei Q, Zhang Y, Wang W, et al., 2021, Clinical Characteristics of Patients with Single-Center Extranodal NK/T-Cell Lymphoma and Prognosis Analysis Based on Pemesterase Chemotherapy. Chinese Journal of Experimental Hematology, 29(3): 735–740.

[15] Zhang G, Liu Y, Zhang Y, 2013, The Effect of Pegaspargase on Coagulation Function in Patients with Lymphoma. China Journal of New Drugs, 22(19): 2281–2285.

[16] Lai WP, Zheng RH, Qin PF, et al., 2021, Efficacy of Cetapenem Combined with Chemotherapy in the Treatment of Peripheral T-Cell Lymphoma. China Practical Medicine, 16(19): 25–27.

[17] Liang S, Wen F, 2020, New Advances in the Treatment of Acute Lymphoblastic Leukemia in Children with Silent Inactivation of Pemesterase. International Journal of Blood Transfusion and Hematology, 43(5): 418–422.

[18] Zhou R, Liu W, 2021, Safety Analysis and Management Measures of Pemesterase in the Treatment of Lymphatic System Tumors. China Prescription Drugs, 19(8): 90–91.

[19] Liu YB, Yuan XL, Ma RJ, et al., 2021, Efficacy and Safety of Programmed Death Receptor 1 Inhibitor in Combination with Chemotherapy for Primary Stage III/IV Extranodal NK/T-Cell Lymphoma. Chinese Medical Journal, 101(16): 1178–1181.

[20] He Y, Zhang L, Yu X, et al., 2020, Effectiveness of PEG-ASP Combined with CHOP Regimen Chemotherapy and Sequential Radiotherapy in the Treatment of Stage I-II Nasal NK/T-Cell Lymphoma. The Great Physician, 5(1): 23–25.