CAGE Regimen in the Treatment of Adult Refractory Acute Non-Lymphocytic Leukemia

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Abstract: *Objective:* To observe the effect of CAGE regimen in the treatment of adult refractory acute non-lymphocytic leukemia. *Methods:* In this experiment, 86 adult patients with refractory acute non-lymphocytic leukemia who were treated between January 2018 and January 2022 were selected as experimental subjects and were divided into two groups, the observation group and the control group, according to different treatment methods, with 43 patients in each group. The observation group was treated with the CAGE regimen, whereas the control group was treated with conventional therapy. The disease remission rate and incidence of adverse reactions were observed. *Results:* The comparison of disease remission rates between the two groups showed that there was no significant difference in the results of the first course of treatment and the second course of treatment between the two groups ($P > 0.05$), but the incidence of adverse reactions in the observation group was lower than that in the control group ($P < 0.05$). *Conclusion:* The CAGE regimen has a significant therapeutic effect in the treatment of adult refractory acute non-lymphocytic leukemia. It improves the treatment advantage of patients during the treatment process, thus alleviating the condition of patients and improving their quality of life.

Keywords: CAGE regimen; Refractory acute non-lymphocytic leukemia; Leukemia; Curative effect

1. Introduction

Leukemia, as a common blood disease, has shown an increasing incidence in clinical studies [1]. Among them, adult refractory acute non-lymphocytic leukemia is a condition with a high incidence and a serious impact. There has been extensive clinical research on this disease [2]. This disease is known to be highly repetitive. In addition, the majority of patients have a long onset cycle and are required to undergo long-term treatment following its onset [3]. Choosing an effective treatment plan to help improve the condition of patients has become one of the key exploration contents of clinical research. Through the analysis of relevant research, it has been found that the CAGE program can help improve the condition of patients to a certain extent [4-6]. Therefore, this study selected 86 adult patients with refractory acute non-lymphocytic leukemia from January 2018 to January 2022 as experimental subjects to observe the effect of CAGE regimen in the treatment of adult refractory acute non-lymphocytic leukemia.

2. Materials and methods
2.1. General information

In this study, 86 adult patients with refractory acute non-lymphocytic leukemia who were treated between January 2018 and January 2022 were selected as experimental subjects and were divided into two groups, the observation group and the control group, according to different management methods, with 43 patients

in each group. The observation group was treated with CAGE regimen, whereas the control group was treated with conventional therapy. There were 25 male and 18 female patients in the observation group, age ranging from 35–80, with an average age of 46.85 ± 1.15 years. There were 43 male and 13 female patients in the control group, in which the male patients were 35–80 years old, with an average age of 46.85 ± 1.16 years.

The inclusion criteria were as follows: (1) adult patients with refractory acute non-lymphocytic leukemia; (2) patients with comprehensive medical information, and those with family members who had given consent to this research. The exclusion criteria were as follows: (1) investigators who did not voluntarily join; (2) patients with any comorbidities. The data comparison between the two groups was unbiased ($P > 0.05$) and had high reliability.

2.2. Methods

The control group received conventional therapy, which was as follows: bone marrow suppression therapy was carried out; the best bone marrow was identified by matching with the bone marrow model; and surgery was performed based on the requirements of bone marrow transplantation; a medication management plan was also designed to improve patient outcome.

The observation group was treated with CAGE regimen, which was as follows: 150–300 ug/d of granulocyte colony-stimulating factor was injected subcutaneously for 1–13 days, 30 mg/d of cytarabine was injected subcutaneously in 2 times, and 20 mg/d of aclarubicin was injected intravenously after an interval of 12 hours; during the treatment period, the ward was disinfected with ultraviolet light twice a day and the patients were required to gargle 1% hydrogen peroxide 3 times a day and use 1:5000 potassium permanganate solution sitz bath to prevent oral and perianal infection; during chemotherapy, the patients were given symptomatic and supportive treatment, along with antiemetics, blood transfusion, and infection prevention.

2.3. Observation indicators

(1) Disease remission rate

   The disease remission rate was calculated based on patients' disease remission in both, the first course of treatment and the second course of treatment. The specific indicators were as follows: complete remission (significant disease control, resolved bone marrow suppression, and liver and kidney functions have returned to normal), remission (relatively good disease control, resolved bone marrow suppression, and obvious improvement of various indicators), and ineffective (no effect after treatment). The disease remission rate was calculated based on the following formula:

$$\text{Remission rate} = \text{complete remission} + \text{partial remission}/n * 100\%.$$

(2) Incidence of adverse reactions

   The incidence of adverse reactions was calculated based on the following formula:

$$\text{Incidence of adverse reactions} = \text{number of people with (loss of appetite} + \text{nausea, vomiting} + \text{oral ulcer} + \text{bone marrow suppression)}/n * 100\%.$$

2.4. Statistical analysis

SPSS 19.0 was used as the main statistical software for data analysis. The count data were expressed in n (%), and χ^2 test was used; the measurement data were expressed in ($\bar{x} \pm s$), and T test was used. $P < 0.05$ indicated significant difference.

3. Results

3.1. Comparison of disease remission rates between the two groups of patients

There was no significant difference in the disease remission rates in the first course of treatment and the second course of treatment between the two groups of patients ($P > 0.05$), as shown in **Table 1**.

Table 1. Comparison of disease remission rates between the two groups of patients (n [%])

Group	n	First course of treatment	Second course of treatment	Overall response rate
Observation group	43	23 (53.49%)	5 (11.63%)	28 (65.11%)
Control group	43	16 (37.21%)	2 (4.65%)	18 (41.86%)
x^2		2.299	1.400	4.674
P		0.129	0.236	0.030

3.2. Comparison of the incidence of adverse reactions between the two groups of patients

The incidence of adverse reactions in the observation group was lower than that in the control group ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of the incidence of adverse reactions between the two groups of patients (n [%])

Group	n	Loss of appetite	Feeling sick and vomiting	Oral ulcers	Myelosuppression	Total incidence
Observation group	43	2	1	0	0	3 (6.98%)
Control group	43	4	3	3	1	11 (25.58%)
x^2						5.460
P						0.019

4. Discussion

Refractory acute non-lymphocytic leukemia is relatively common in clinical research. Due to its long onset cycle, patients tend to experience a more severe onset cycle following the onset of the disease, and they are repeatedly tormented by the disease, which is harmful to their health both, physically and mentally [7-9]. Helping to improve the condition of patients and providing effective therapeutic intervention during the treatment process have become the focus of existing clinical research. Through the analysis of relevant research, it has been found that CAGE regimen is able to meet the needs of the treatment of the disease and can be used to achieve better results in terms of patient outcome; the effective rate of treatment is relatively high with this regimen [10-12]. Other than that, the safety of patients during treatment is also relatively good with CAGE regimen. The use of CAGE regimen significantly reduces the probability of patients suffering from loss of appetite and nausea as well as vomiting, oral ulcer, and bone marrow suppression, thus improving the quality of life of patients and meeting the treatment requirements. Cytarabine and aclarubicin, as commonly used chemotherapeutic drugs, can effectively inhibit myeloid differentiation in leukemic patients, thus providing a basis for disease control in patients [13,14]. At the same time, the use value of the aforementioned drugs is also reflected in their costs. The costs of these drugs are relatively low. For patients receiving long-term treatment, this regimen may reduce the economic burden of treatment and improve the level of treatment, leaving a good therapeutic effect in the treatment process, especially in the improvement of patients' quality of life. This shows that the therapeutic effect of this regimen is in line with the treatment needs of adult refractory acute non-lymphocytic leukemia patients [15].

In current clinical research, the incidence of refractory acute lymphoblastic leukemia is increasing. The

clinical manifestations of this disease vary following its onset. Therefore, scientific management plans should be designed in the process of patient management. Through the analysis of relevant research, it can be concluded that CAGE regimen can meet the treatment needs of patients and highlight the treatment advantages for patients in the treatment process, especially in terms of treatment safety and disease course control. Therefore, in the treatment process, the aforementioned treatment should be used as the basis to aid in the design of the treatment plan. It is necessary to take the treatment research as the premise and highlight the characteristics of the treatment intervention. In short, the main components of patient treatment are clarified after analyzing the treatment research work, so that the advantages and characteristics of patient treatment can be displayed in the treatment process. This meets the treatment needs of patients, and the treatment would be suitable for the patients. Having a patient-specific management plan is of great significance to the treatment of patients. Through the analysis of existing clinical research, it has been discovered that CAGE regimen has a significant effect on the treatment of adult patients with refractory acute non-lymphocytic leukemia. It provides a basis for the control of the patient's condition, thus guaranteeing the treatment effect. At the same time, the patient's treatment research should be the goal, while considering the patient's treatment needs, so as to strengthen the evaluation and analysis of treatment safety. The treatment effect is guaranteed with the implementation of CAGE regimen during the treatment process, and the final treatment effect would able to meet the patient's treatment needs. Applying the regimen in the treatment process would provide protection for the control and management of the patient's condition. In addition to that, it is necessary to strengthen the analysis of treatment safety in line with the treatment needs of patients, carry out the analysis and management of patient treatment research well based on the premise of the incidence of adverse reactions during the treatment process, such as loss of appetite, nausea, vomiting, oral ulcer, bone marrow suppression, and other symptoms, and then carry out the corresponding treatment analysis and management according to the patient's treatment needs, so as to ensure that the characteristics of the treatment can be highlighted in the process, improve the patient's clinical research, guarantee the safety of patients, as well as present new features and enhance the value of clinical treatment. In addition, it is also imperative to focus on the patient's clinical treatment research, continuously improve the patient's treatment plan, and strengthen the research on the application of the plan in the treatment process, so as to improve the treatment level, reduce the risk and difficulty of treatment, as well as highlight the advantages of patient treatment.

This study confirmed that in the treatment of adult patients with refractory acute non-lymphocytic leukemia, the treatment regimen used for the patients in the observation group was more effective. There was no significant difference in the disease remission rates based on the results of the first course of treatment and the second course of treatment between the two groups of patients ($P > 0.05$). The incidence of adverse reactions in the observation group was lower than that in the control group ($P < 0.05$). Therefore, it is evident that CAGE regimen has significant advantages in the treatment of such patients and is able to meet their treatment requirements, with better safety.

In conclusion, this study verifies the advantages of CAGE regimen in the treatment of adult patients with refractory acute non-lymphocytic leukemia.

Disclosure statement

The authors declare no conflict of interest.

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