

Available online at [www.sciencerepository.org](http://www.sciencerepository.org)

Science Repository



## Review Article

# Factors Affecting Long-Term Survival in Acute Myeloid Leukemia

Zhu Yi-Qian\*, Cheng Jian<sup>1</sup> and Chen Bao-An\*

Department of Hematology and Oncology, Zhongda Hospital, School of Medicine, Southeast University, Nanjing, China

### ARTICLE INFO

#### Article history:

Received: 30 March, 2020

Accepted: 16 April, 2020

Published: 20 April, 2020

#### Keywords:

AML

long-term survival

prognostic factors

### ABSTRACT

Acute myeloid leukemia (AML) is a common malignancy of the blood system, and most patients are so ill that they often die if they are untreated in time. In recent years, with the improvement of chemotherapy drugs and methods, the complete remission rate has been significantly improved, but the long-term survival rate still has great room for improvement. This review summarized the influencing factors related to the long-term survival of AML patients through reading and sorting out multiple pieces of literature.

© 2020 Chen Bao-An, Zhu Yi-Qian. Hosting by Science Repository. All rights reserved.

### Introduction

Acute myeloid leukemia (AML) is a malignant clonal disease of hematopoietic stem progenitor cells, which proliferate and accumulate in bone marrow and other hematopoietic tissues, inhibiting normal hematopoietic growth and infiltrating other organs and tissues. AML is a common malignancy of the blood system. Most patients are seriously ill and die if untreated. With the improvement of chemotherapy drugs and methods, the complete response rate of patients can reach 70%-90% [1]. However, the duration of complete remission of > for 5 years is relatively small, and the 5-year survival rate of adult AML is only 20%-40%. Therefore, to find out the factors affecting the long-term survival of leukemia is expected to prolong the life of more patients and achieve the goal of cure. Through reading and collating multiple pieces of literature, we found that patients' age and disease type, remission time and course of treatment, personalized treatment method and survival factors of AML patients were closely related.

### Long-Term Survival

With the improvement of chemotherapy drugs and chemotherapy regimens, the complete remission rate of AML has been significantly

increased, and its treatment is more targeted at disease-free long-term survival, with induction therapy as the main influencing factor. Lv Tao pointed out that only 10%~30% of AML patients could survive > for 5 years [2]. The long-term survival time of AML was negatively correlated with age, and the type of leukemia, remission time and course of treatment, and individualized treatment was closely correlated with the survival factors of patients.

### Age and Type of Leukemia

Wang Yaping, such as clinical research, points out that in patients with AML M2, M3 and M5 type medium and long-term survival in patients with more, M3 in the induction of remission prone to diffuse intravascular coagulation (DIC), intracranial bleeding complications, but once handled well, obtain complete remission (CR), and more likely to survive for a long time, the biological characteristics about than the disease itself [3, 4]. Wang Xiaoli and others pointed out that long-term survival in AML was negatively correlated with age, and the highest proportion of leukemia types comprised M3 and M5. Related studies have shown that older the patients, the worse their prognosis, which is generally believed to be related to the fact that elderly patients are more likely to die in the early stage of chemotherapy due to infections, bleeding and systemic organ failure [5].

\*Correspondence to: Chen Bao-An, Professor and Chairman, Department of Hematology and Oncology, Zhongda Hospital, School of Medicine, Southeast University, Dingjiaqiao 87, Gulou District, Nanjing 210009, Jiangsu Province, China; Tel: 862583272006; Fax: 862583272006; E-mail: cba8888@hotmail.com  
Zhu Yi-Qian, Department of Hematology and Oncology, Zhongda Hospital, School of Medicine, Southeast University, Nanjing 210009, China; E-mail: 763744522@qq.com

### Time of Complete Remission and Degree of Early Myelosuppression

In the treatment of acute leukemia, induction chemotherapy is still the most basic and primary treatment; so, the selection of induction chemotherapy program, the course of remission and the treatment after remission are related to long-term survival. Li Wei pointed out that shorter the time of complete remission, the longer the survival period, indicating that the time of complete remission in the initial treatment was an independent influencing factor for disease-free survival in the later stage [6]. Leucocyte load indicators include leucocyte count and percentage of primitive immature cells, etc. Most scholars believe that peripheral leucocyte at the onset of disease is an important prognostic factor [7]. Wang Yaping people in the study found that by easing in 1 year after chemotherapy need break to maintain between 2 weeks to a month, usually not more than 2 months, can be applied to the original plan, can also be associated with the third chemotherapy drugs, chemotherapy to obtain bone marrow suppression effect, leukocyte number less than  $1 \times 10^9 /L$ , namely to strengthen and maintain proper chemotherapy can increase survival time [1]. Many clinical studies have pointed out that failure to achieve CR after a standard induced remission chemotherapy regimen is a poor prognostic factor, and even after autologous stem cell transplantation, the recurrence rate is still higher than that of other patients after autologous stem cell transplantation [8, 9].

### Individualized Therapy

Xu Huli pointed out in their study that the timely treatment was accompanied by individualized treatment plans, and the hospital also formulated treatment plans that were consistent with the actual conditions of patients according to their conditions, which was conducive to the long-term survival of patients, which was also an important reason for the high complete response rate and disease-free survival of AML patients [10]. In addition, late-stage intensive treatment also affects the long-term survival of patients. The results showed that the long-term survival rate of patients with >3 years of chemotherapy was higher. Consolidation treatment after remission is generally stratified according to the patient's age, molecular genetics, the presence of a bone marrow transplant donor and other factors, and individualized treatment plans are formulated, but the prognosis still varies. According to the classification of MICM, individualized treatment and enhanced supportive treatment for acute leukemia will improve the clinical remission rate of patients. In the long run, by shortening the treatment time, reducing the risk of organ damage and secondary tumor, and by early return to society and family, patients' anxiety will be reduced.

The long-term survival rate of AML patients is low and exploring the influencing factors can effectively prolong the survival time of patients and even achieve the cure of patients. Generally speaking, there are many influencing factors for AML, and each factor affects and interacts with each other. The analysis of individual factors can effectively prolong the survival of patients. After reviewing the relevant literature, it was concluded that age, disease type, remission time and course of treatment, personalized treatment method and survival factors of AML patients were closely related.

### Funding

This work was supported by Key Medical Projects of Jiangsu Province (BL20140718), Key Medical of Jiangsu Province (ZDXKB2016020) and Jiangsu Social Development Project (BE2018711).

### REFERENCES

1. Yan H (2010) Clinical analysis of 23 cases of acute myeloid leukemia in long-term survival. *Dis Surveill Control* 2010: 163-165.
2. Lv T, Guo S, Xv X (2013) Clinical analysis of long-term survival in patients with acute myeloid leukemia. *Chin Med Eng* 5: 90-91.
3. Wang V (2006) Clinical analysis of 18 patients with acute myeloid leukemia who survived for more than 3 years. *J Clin Hematol* 19: 110-111.
4. Swansbury GJ, Lawler SD, Alimena G, Arthur D, Berger R et al. (1994) Long-term survival in acute myelogenous leukemia second follow-up of the Fourth International Workshop on Chromosomes in Leukemia. *Cancer Genet Cytogenet* 73: 1-7. [[Crossref](#)]
5. Wang X, Luo M, Cheng H (2007) Clinical study on acute leukemia with disease-free survival for more than 10 years. *J Clin Hematol* 20.
6. Li W, Bi Y, Liu B (2011) Clinical analysis of nuclear binding factor - related acute myeloid leukemia. *J Chin Acad Med Sci* 33: 517-524.
7. Bandini G, Zuffa E, Rosti G, Battista R, D'Emilio E et al. (1991) Long-term outcome of adults with acute myelogenous leukemia: results of a prospective, randomized study of chemotherapy with a minimal follow-up of 7 years. *Br J Haematol* 77: 486-490. [[Crossref](#)]
8. Mayer RJ, Davis RB, Schiffer CA, Berg DT, Powell BL et al. (1994) Intensive post remission chemotherapy in adults with acute myeloid leukemia. Cancer and Leukemia Group B. *N Engl J Med* 331: 896-903. [[Crossref](#)]
9. Stein AS, O'Donnell MR, Slovak MS (1996) Do cytogenetics predict outcome of autologous bone marrow transplantation for acute myelogenous leukemia in first remission. *Blood* 88: 485.
10. Xv H (2016) Clinical analysis of acute myeloid leukemia in long-term survival. *China Prac Med* 11.