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Outcomes in acute myeloid leukemia among older adults: a five-year retrospective cohort from a Brazilian public hospital

Hercules Amorim Mota Segundo[1*], Fernando Barroso Duarte[2]

1. Universidade Federal do Ceará – Fortaleza (CE), Brazil.
2. Hospital Universitário Walter Cantídio – Fortaleza (CE), Brazil.

***Corresponding author:** hmotasegundo@gmail.com

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ABSTRACT

Acute myeloid leukemia (AML) remains a significant public health issue in the Brazilian public healthcare system. A retrospective chart review was conducted for patients diagnosed with AML between 2019 and 2024 at a university hospital in northeastern Brazil. Six patients underwent intensive chemotherapy with daunorubicin and cytarabine. Fourteen patients received low-intensity therapy (venetoclax combined with low-dose cytarabine, venetoclax and azacitidine, and azacitidine monotherapy). The overall one-year survival rate in this age group was 28.9%, with a median overall survival of 8.3 months. When stratified by treatment intensity, patients receiving low-intensity therapy had a median overall survival of 10.9 months, compared to 1.1 month for those receiving intensive chemotherapy and 1.5 month for those receiving supportive care alone. The incorporation of low-intensity therapies may reduce toxicity and improve survival among elderly patients in low- and middle-income countries.

Keywords: Leukemia, Myeloid, Acute. Antineoplastic agents. Survival analysis.

INTRODUCTION

Acute myeloid leukemia (AML) remains a serious public health concern in the Brazilian public healthcare system. Current challenges include the availability of novel therapies, the adequacy of hospital infrastructure, and the management of infectious complications[1]. While significant advances have been achieved over recent decades in the treatment of younger patients, survival rates among the elderly population have stagnated[2]. We conducted a retrospective study to evaluate the clinical characteristics, treatment patterns, and survival outcomes of elderly AML patients treated at a public tertiary hospital, and to identify barriers to optimal therapy in this setting.

METHODS

A retrospective review was conducted of medical records from adult patients diagnosed with AML (excluding acute promyelocytic leukemia) who were 60 years old or older at the time of diagnosis, between 2019 and 2024, at Walter Cantídio University Hospital, affiliated with the Universidade Federal do Ceará.

This study was approved by the Institutional Review Board (no. 6.998.279). Statistical analysis was performed using the Kaplan–Meier method for survival analysis and the Log-rank test for comparison, with R statistical software (version 4.3.2), following a median follow-up of 23.9 months.

RESULTS

A total of 27 patients aged 60 years old or older were diagnosed with AML during the study period, with a mean age of 67 (Table 1). Among them, seven patients were deemed ineligible for chemotherapy and received only supportive care (including cytoreduction when indicated and transfusion support). Six patients underwent intensive chemotherapy with daunorubicin and cytarabine. Fourteen patients received lower-intensity therapy: 11 were treated with venetoclax plus low-dose cytarabine (LDAC), two with azacitidine plus venetoclax, and one with azacitidine monotherapy. The one-year overall survival (OS) rate for this age group was 28.9%, with a median OS of 8.3 months.

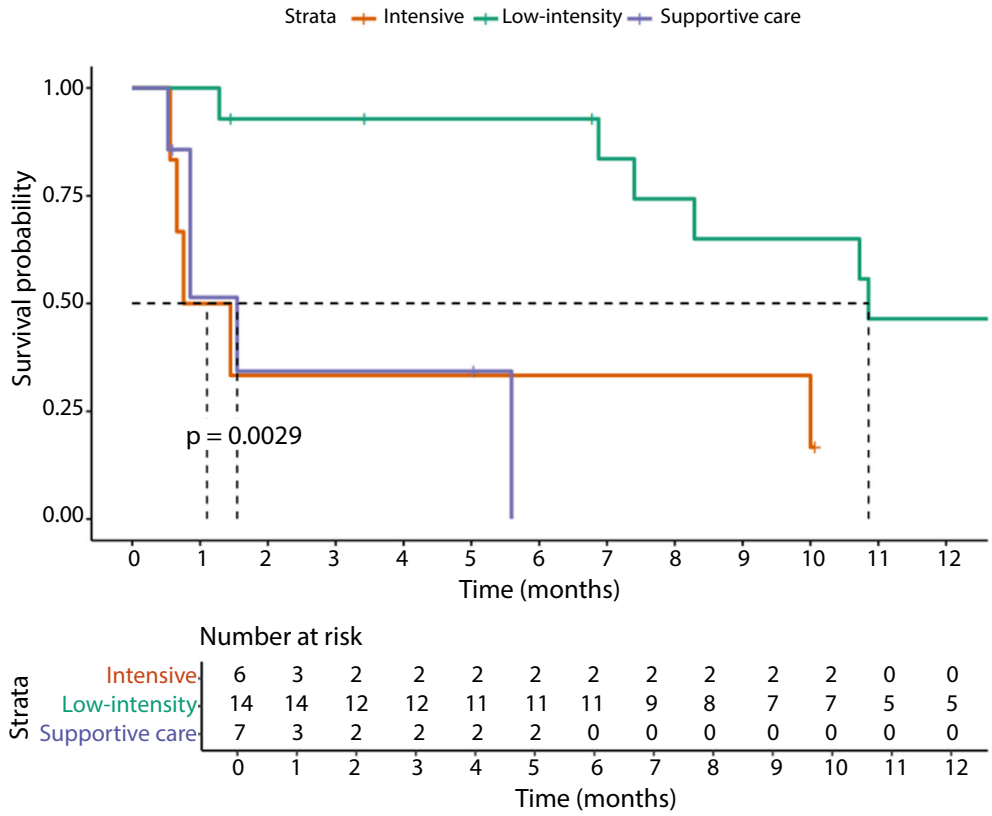
Table 1. Demographic and disease characteristics.

Characteristic	Intensive chemotherapy (n = 6)	Low-intensity chemotherapy (n = 14)	Supportive care (n = 7)
Median age (range), years old	65.5 (60–71)	65.5 (60–76)	71 (66–79)
Male sex, n (%)	3 (50)	7 (50)	4 (57)
Comorbidities			
Hypertension	3 (50)	7 (50)	3 (43)
Type 2 diabetes mellitus	2 (33)	3 (21)	5 (71)
Previous malignancy	1 (17)	1 (7)	
Heart failure		1 (7)	1 (14)
European Leukemianet risk stratification 2022, n (%)			
Favorable	2 (33)	2 (14)	0 (0)
Intermediate	4 (67)	11 (79)	7 (100)
Adverse	0 (0)	1 (7)	0 (0)
Mutated NPM1, n (%)	2 (33)	2 (14)	0 (0)
Mutated FLT3, n (%)			
ITD	0 (0)	1 (7)	1 (14)
TKD	0 (0)	1 (7)	
Complex karyotype, n (5)	0 (0)	1 (7)	0 (0)
Median time from diagnosis to treatment, days	**4**	**14**	

Source: Elaborated by the authors.

When stratified by treatment intensity, the median OS was 10.9 months for patients receiving lower-intensity therapy, compared with 1.1 month for those receiving intensive chemotherapy and 1.5 month for those receiving supportive care alone (Fig. 1).

Regarding cytogenetic and molecular profiling, one patient had an FLT3-TKD mutation (treated with LDAC plus venetoclax), and two had FLT3-ITD mutations (treated with supportive care and LDAC plus venetoclax, respectively). Three patients harbored NPM1 mutations. No patient proceeded to allogeneic hematopoietic stem cell transplantation, due to therapy-related death, clinical ineligibility, or lack of treatment response. The leading causes of death were disease progression (n = 14) and infectious complications (n = 8)



Source: Elaborated by the authors.

Figure 1. Overall survival among older patients with acute myeloid leukemia, according to treatment intensity.

DISCUSSION

Acute myeloid leukemia continues to exhibit high mortality rates among elderly patients. Incorporating lower-intensity regimens may offer reduced toxicity and, consequently, improved survival in this population. The randomized VIALE-A trial[3] demonstrated a median OS of 14.7 months with azacitidine–venetoclax *versus* 9.6 months with azacitidine alone, in patients with a median age of 76. The VIALE-C trial[4] reported a median OS of 8.4 months in the cohort treated with a low dose of cytarabine and venetoclax.

Cost-reducing strategies may expand access to these therapies, including dose reductions through the concomitant use of cytochrome P450 inhibitors[5,6] and shortened administration schedules of venetoclax[7]. Our center's clinical experience has demonstrated the effectiveness of these approaches, particularly in reducing the number of days required for venetoclax treatment, as a means of increasing drug accessibility.

However, the Brazilian public healthcare system has not incorporated these technologies yet; according to the most recent therapeutic guidelines[8], supportive care and low-dose cytarabine remain the only available options. Disparities in AML treatment outcomes are observed not only between high-income and low- to middle-income countries[9] but also in Brazil, between the public and private healthcare sectors[10].

Only a few studies have evaluated outcomes of AML in Brazilian patients, and they reported results inferior to those observed in cohorts from high-income countries[11–13]. This study, however, provides novel insights by focusing on patients over 60 years old following the integration of BCL-2 inhibitors into routine clinical practice.

Limitations to this study include its retrospective and single-center design, and the small number of patients included. The irregular availability of low-intensity therapy may also have led to selection bias in the patients receiving each treatment.

CONCLUSION

Acute myeloid leukemia continues to carry a high-mortality rate among elderly patients. The incorporation of lower-intensity regimens may reduce toxicity and improve survival in elderly patients in low- to middle-income countries. Cost-reducing strategies could further expand access to these therapies.

CONFLICT OF INTEREST

Nothing to declare.

DATA AVAILABILITY STATEMENT

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

AUTHORS' CONTRIBUTIONS

Conception: Duarte FB; **Data collection:** Segundo HAM; **Supervision:** Duarte FB; **Manuscript writing:** Segundo HAM; **Critical revision:** Duarte FB; **Final approval:** Duarte FB.

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