Survival of Acute Lymphoblastic Leukemia: Experience of a Single Center in Colombia

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Background

Acute lymphoblastic leukemia (ALL) is a heterogeneous group of hematologic disorders characterized by malignant transformation and proliferation of lymphoid progenitor cells in bone marrow, periphery blood, and extramedullary sites [1]. Survival of ALL has increased as a result of advances in management efficacy as well as risk stratification to determine the most appropriate treatment regimen.

Objective

The aim of the present study is to assess survival rate for patients with diagnosis of ALL in a single center in Colombia.

Materials & Methods

A retrospective cohort study was conducted at a tertiary referral center in Colombia (Clínica FOSCAL) on patients >18 years who were diagnosed with ALL between July 2013 and November 2017. All patients were managed based on PETHEMA protocol for ALL. Descriptive statistics were used to analyze patient’s demographic characteristics. The Kaplan-Meier method was used to assess overall survival (OS) and relapse-free survival (RFS) rates at one and three years.

Results

Seventy-three patients were included. All patients were older than 18 years with a mean age of 39 years (range 18-80 years). Thirty-nine were male and 34 female.

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Table 1. Demographic and clinical characteristics of patients

Characteristics at diagnosis	Treatment		P-value
	HSCT n=24 (32.9%)	Chemotherapy n=49 (67.1%)	
Male	25 (51.0)	14 (58.3)	0,556
Age (years)*	40 [27-50]	28.5 [22-42.5]	0,04
Clinical			
Splenomegaly	12 (24.5)	12 (50.0)	0,093
Hepatomegaly	14 (28.6)	6 (25.0)	0,949
Infections	19 (38.8)	3 (12.5)	0,066
Biomarkers*			
Hb (g/dL)†	9.3 [5.5 -15.9]	8.9 [4.9 -14]	0,483
Leucocytes x10 ³ (mm ³)	5.75 [2.58 – 26.2]	12.25 [3.21-68.17]	0,164
Blasts (%)	8.8 [0-40.3]	49 [12-77]	0,025
Granulocytes (µL)	1013 [330.5 – 2597.5]	1550 [709.5-3828]	0,151
Platelets x10 ³ (mm ³)	31 [19 - 92]	61.5 [50 -104]	0,143
Cr (mg/dL)	0.77 [0.62-1.02]	0.9 [0.78-0.98]	0,263
Urea (mg/dL)	14 [11.8-17.6]	12.7 [11-18]	0,953
Urates (mg/dL)	5.7 [4.9-8.7]	6.9 [4.2-8.7]	0,988
ALT (U/L)	36.5 [24.5-69]	47.5 [19.5-80]	0,728
AST (U/L)	25 [18-49]	28 [17-44]	0,692
AP (U/L)	191 [95.5-209.5]	98 [77-144.5]	0,168
LDH (U/L)	426[219-983]	462.5 [337-884]	0,646
Bilirubin (mg/dL)	0.48 [0.3-0.7]	0.47 [0.32-0.71]	0,909
Albumin (g/dL)	3.6 [3.4-4.1]	4.0 [3.6-4.1]	0,095

* Median [IQR]. † Average [Range]

The most common type of ALL was B-precursor lineage (86.4%), followed by T-precursor lineage (6.8%). Of all patients, 80.82% were classified as high risk.

Image 1. Subclassification of ALL by immunophenotype

Fifty-five (76.38%) patients underwent cytogenetic studies for BCR/ABL detection; BCR/ABL was identified in five patients. Twenty-four (32.9%) patients received allogenic hematopoietic stem cell transplantation (allo-HSCT), 15 were from matched donor and 9 were haploidentical. Seventeen (70.8%) patients were taken to HSCT in first complete response (CR1), six (25%) patients were taken in CR2 and 1 (4.2%) in CR3.

Overall survival was 61.5% (CI48.7-72) at one year, and 22.9% (CI10.5-38.1) at three years.

Image 2. Overall survival at 1 and 3 years by type of treatment

Image 3. Relapse-free survival at 1 and 3 years by type of treatment

There were 20 (47.61%) deaths due to either relapse or disease progression. Treatment-related mortality was low (12.32%). Fourteen patients were lost to follow-up.

Conclusions

Overall survival for ALL, as well as overall and relapse-free survival at three years following allo-HSCT was very similar to results reported in the existing literature[2]. The most common cause of death in ALL patients in Clínica FOSCAL was primary disease, and treatment-related mortality was low.

References

1. Terwilliger T, Abdul-Hay M. Acute lymphoblastic leukemia: a comprehensive review and 2017 update. Blood Cancer Journal (2017) 7, e577.
2. Huguet F, Leguay T, Raffoux E, et al. Pediatric-inspired therapy in adults with Philadelphia chromosome-negative acute lymphoblastic leukemia: the GRAALL-2003 study. J Clin Oncol. 2009;27(6):911-8.