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POSTER ABSTRACTS

612.ACUTE LYMPHOBLASTIC LEUKEMIAS: CLINICAL AND EPIDEMIOLOGICAL

Long-Term Outcomes of T-Cell Acute Lymphoblastic Leukemia and Risk Factors for Survival in a Multicenter Registry Study from Brazil

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Introduction

T-cell acute lymphoblastic leukemia (T-ALL) constitutes around 25% of all newly diagnosed cases of acute lymphoblastic leukemia (ALL) in adults. While most pediatric treatment protocols categorize patients (pts) based on their phenotype, this approach is seldom applied to adults. Nevertheless, there is a scarcity of reported cohorts specifically focusing on adult T-ALL. Often, these cases are studied alongside B-cell cases, despite their notable biological differences, or grouped with T-cell lymphoblastic lymphoma, which exhibits a more favorable prognosis compared to T-ALL. The objective of this study is to present outcomes and identify prognostic factors for survival of adults newly diagnosed with T-ALL, utilizing data from a real-world multicenter registry study conducted in Latin America.

Methods

This registry encompassed four different academic centers in Brazil. The study included pts aged 15 years and above newly diagnosed with T-ALL between January 2009 and June 2022. Clinical data were collected from medical records after ethical approval. Overall (OS) and event-free (EFS) survivals were calculated by Kaplan-Meier method, with Cox regression multivariate analysis (MVA) for finding risk factors and competing risk analysis for relapse.

Results

A total of 97 pts were included, with a median age of 27 years (range, 15 - 82). Thymic T-ALL accounted for 51% of the cases. Mediastinal bulky was found in 48% and positivity of initial cerebrospinal fluid (CSF) evaluation was 12.5% (by morphology or flow cytometry). Baseline features of this cohort are summarized in table 1. Most pts (88%) were treated with pediatric-inspired regimens (asparaginase [ASP]-based), mostly adapted GMALL (43%) and adapted BFM (22%). Native E. coli ASP was used in 76% and pegylated ASP (PEG-ASP) was used in remaining cases. During presentation or treatment, 15% of the subjects experienced thrombosis of any site, with most cases being associated with the use of ASP (64%) and diagnosed during induction (64%). Following the frontline regimen, 77.3% of pts achieved complete response (CR). Overall, 11.3% of pts died during the induction phase, while 8% were primary refractory. Univariate analysis for CR showed correlation with age (p=0.002), bulky size (p=0.016), and use of ASP (p=0.009). Median follow-up period was 6 years. Overall, allogeneic stem cell transplant (alloHSCT) was performed in 18 pts, being 11/18 in first CR. Five-year OS and 5y EFS were 43.7% (95% confidence interval [CI]: 34.4-55.5) and 36.4% (95% CI 27.9-47.5), respectively. Over the follow-up, 5-year relapse rate and non-relapse

mortality (NRM) were 35.6% and 27.9%, respectively. Among pts who underwent alloHSCT, 5y OS was 64%. In the univariate analysis, older age (HR 1.02 [1.01-1.04], p<0.01) was associated with lower OS. Conversely, thymic T-ALL (HR 0.54 [0.3-0.96], p=0.03) and use of ASP (HR 0.35 [0.17-0.716], p<0.01) were associated with higher OS. Initial white blood cell count was not statistically associated with OS. Subsequently, we performed a subgroup analysis focusing on the adult and young adult population (AYA, age between 15-45 years). In this subgroup (n=85), 89% were treated with pediatric-inspired regimens and 5y OS was 46.5%. In the univariate analysis, thrombosis (HR 2.21 [1.09-4.48], p=0.02) was associated with lower OS, while thymic T-ALL (HR 0.48 [0.24-0.93], p=0.03) and the use of ASP (HR 0.317 [0.13-0.75], p<0.01) were associated with higher OS. In the MVA for AYA, thymic T-ALL (HR 0.50 [0.25-0.98], p=0.04) and thrombosis (HR 2.23 [0.97-5.13], p=0.054) remained associated with OS, while older age was not (HR 1.004 [0.96 - 1.04], p=0.81) (Figure 1).

Conclusions

Reported outcomes of T-ALL in this registry from Latin America are comparable to older reports from large groups worldwide. Currently, European groups have reported OS rates surpassing 70% for adults with T-ALL.However, in our setting, even in the AYA population, OS was disappointing. This could be attributed to increased NRM due to treatment toxicity and limited access to HSCT, which may have contributed to these findings. As previously reported, thymic T-ALL remains a lower-risk subtype. Additionally, thrombosis has emerged as an independent risk factor for OS in the AYA population, which is a novel finding that warrants further research. To the best of our knowledge, this is the first study specifically focusing on adult T-ALL from Latin America.

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Table 1. Baseline features of cohort (T lymphoblastic leukemia, n=97)	
Age – median (range, IQR)	27 (15-82,21-37)
Sex	Male: 80.4% (78/97)
BMI (kg/m²) – median (range, IQR) *Missing: 26/97*	23.6 (17.4-48.3, 20.9-26.6)
Obesity - % (n)	12.7 (9/71)
Extramedullary disease	73.9% (68/92)
Mediastinal bulky	47.8% (43/90)
EGIL classification - % (n)	Pro-T: 7.4 (6) Pre-T: 24.7 (20) Cortical: 50.5 (41) Mature: 17.4 (14)
CD34 expression	Positive: 37.5% (30/80)
CD1a expression	Positive: 51.2% (41/80)
CD117 expression	Positive: 18% (11/61)
CD10 expression	Positive: 57.1% (40/70)
ETP leukemia	13.3% (10/75)
Initial WBC (x10⁹/L) – median (range, IQR)	18.6 (0.34 – 566, 7.9-90.5)
WBC≥100x10⁹/L in T-ALL - % (n)	23.1 (22/95)
Monocytes (x10⁹/L) – median (range, IQR)	0.75 (0-11.6, 0.17-1.5)
Abnormal karyotype	43.1% (25/58)
Traumatic lumbar puncture (≥ 10 RBC/µL	60.2% (53/88)
Positive CSF cytology	6.5% (5/78)
Positive CSF by flow cytometry	23.5% (8/34)

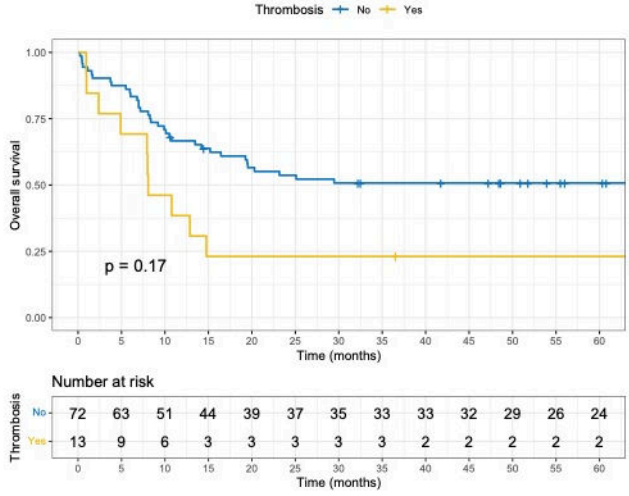

Figure 1. OS for T-ALL in AYA population according to thrombosis.

Figure 1

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