Comparative Real-World Outcomes in *De Novo* and Therapy-Related Acute Lymphoblastic Leukemia: Mortality and Healthcare Utilization

M. EYSHA[1], M. ELCHOUEMI[2], A. ASAD[3], M. KASIANCHYK[1], M. KALAS[1] and E. TURK[41]
Texas Tech University Health Sciences Center, El Paso, Texas, USA [2] Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center El Paso, El Paso, Texas, USA [3] UTMB John Sealy School of Medicine, Galveston, Texas, USA [4] John H. Stroger Jr. Hospital of Cook County, Internal Medicine, Chicago, Illinois, USA

Texas Tech Health EL PASO

Introduction

Acute Lymphoblastic Leukemia (ALL) is a heterogeneous hematologic malignancy. Subtypes, such as de novo ALL and Therapy related ALL (T-ALL), may present with differing clinical characteristics and prognoses, potentially impacting treatment approaches and healthcare resource utilization.

Aim

To compare mortality rates and healthcare utilization patterns between patients with de novo ALL and T-ALL.

Objectives

The primary outcome measures were overall mortality and healthcare utilization metrics, including rates of hospitalization, intensive care stays, usage of critical care services, and need for ventilation management.

Methods

DESIGN and SETTING: This retrospective cohort study utilized data from the real-world TriNetX database network across multiple centers. Patients were followed for 3 years.

PARTICIPANTS: Data for patients diagnosed with *de novo* ALL or T-ALL were extracted from the TriNetX network. Inclusion criteria included patients aged > 18 years. For the *de novo* ALL group, patients must not have a history of previous malignancy, chemotherapy, or radiotherapy. For the therapy-related ALL group, patients must have a history of previous cancer, chemotherapy, or radiotherapy.

Results

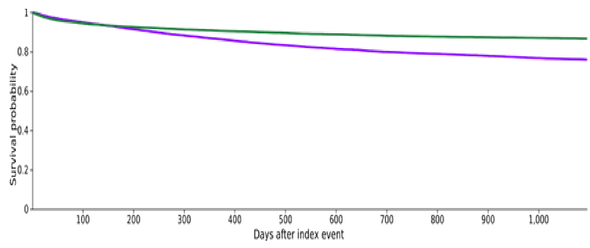


Figure 1, Kaplan - Meier survival analysis

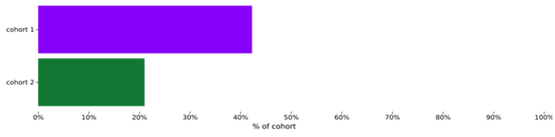


Figure 2. odds ratio of the hospitalization.

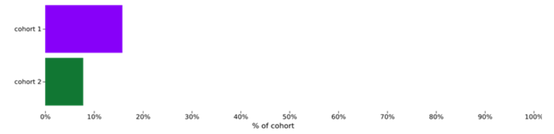


Figure 3. Odds ratio of the Critical care services use.

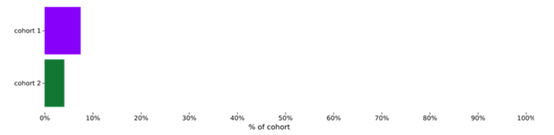


Figure 4. odds of Mechanical ventilation.

1:1 propensity score matching, each cohort included 10,528 patients. The average age in the *de novo* ALL (Green color) group was 42.3 ± 20.4 years, and in the T-ALL (Purple color) group was 56 ± 19.7 years. In both groups, patients were more likely to be white (70%), non-hispanic (66%), and male (55%).

After 3 years, T-ALL was associated with significantly increased mortality (hazard ratio [HR], 1.71 [95% CI, 1.59-1.84]) figure 1, hospitalizations (OR, 2.750 [95% CI, 2.586, 2.925]) figure 2, critical care services (OR, 2.223 [95% CI, 2.033, 2.432]) figure 3, and ventilation (OR, 1.896 [95% CI 1.677, 2.142]) figure 4.

Discussion

Therapy-related ALL patients are older and experience higher mortality, hospitalization, critical care, and ventilation rates over three years. This highlights the need for subtype-specific treatment and resource allocation, as well as further research into the factors causing these disparities to improve therapy-related ALL outcomes.