Real-World Outcomes of Pediatric-Inspired AYA-15 Protocol in Adolescents and Young Adults with Acute Lymphoblastic Leukemia: A Decade of Single-Center Experience"

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Introduction

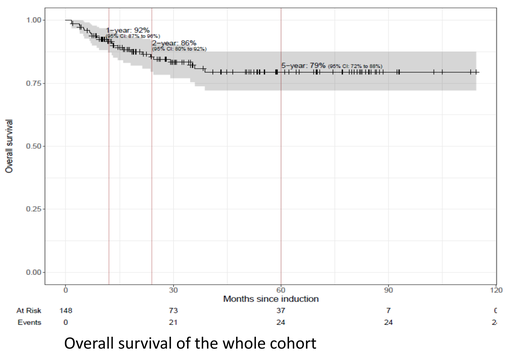
AYA patients with Ph-negative ALL often have inferior outcomes compared to younger children. Pediatric-inspired regimens improve survival, but real-world data from non-Western populations are limited.

Objectives

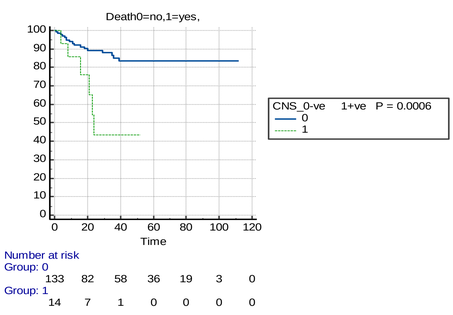
To evaluate the real-world efficacy, safety, and prognostic factors of the AYA-15 protocol in AYAs with Ph-negative ALL in Saudi Arabia.

Methods

In this retrospective cohort study, 149 patients aged ≥14 years with newly diagnosed B- or T-cell ALL were treated with the AYA-15 protocol at King Faisal Specialist Hospital and Research Centre between 2015 and 2024. Key outcomes included complete remission (CR) by day 28, measurable residual disease (MRD) status, relapse, allogeneic stem cell transplantation (allo-SCT), and survival rates. Kaplan-Meier analyses were performed for overall survival (OS), disease-free survival (DFS), and event-free survival (EFS), with subgroup comparisons by immunophenotype.



Overall survival of the whole cohort



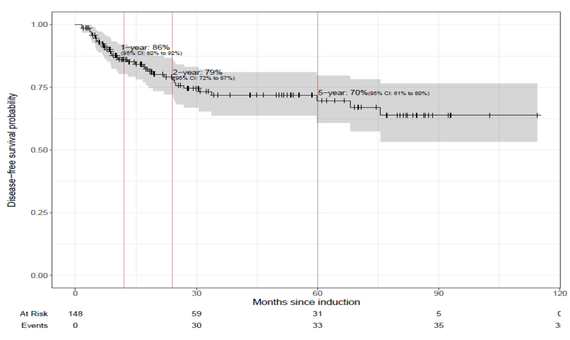
Overall survival regarding initial CNS status

Results

The median age was 18 years (IQR, 16–23), with 54% male patients and 73% presenting with B-cell ALL. By day 28, 86% achieved morphological CR, and 76% achieved MRD negativity, increasing to 78% post-consolidation. Over a median follow-up of 2.48 years, 17% relapsed, 19% underwent allo-SCT, and 16% died. The 5-year estimated OS, DFS, and EFS were 79% (95% CI: 72–88), 70% (61–80), and 59% (51–70), respectively. No statistically significant differences in survival were observed between B-cell and T-cell subtypes (log-rank p > 0.3). However, CNS involvement at diagnosis was associated with significantly inferior overall survival (p = 0.0006), though not with relapse risk (p = 0.3311). Common grade ≥2 adverse events included febrile neutropenia (41% induction, 51% consolidation), elevated AST/ALT (64% induction, 72% consolidation), and allergic reactions (27% during consolidation).

Conclusion

The AYA-15 pediatric-inspired protocol demonstrated favorable remission and survival outcomes in a high-risk AYA ALL cohort, with an acceptable toxicity profile. CNS disease at diagnosis remains a significant adverse prognostic factor for overall survival. These results support the routine implementation of pediatric-based regimens in older adolescents and young adults. Future analyses will explore multivariable predictors of relapse and mortality to refine risk-adapted approaches.



Disease free survival of the whole cohort

References

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