OUTCOMES IN ADOLESCENT AND YOUNG ADULTS (AYA) PRECURSOR B- ACUTE LYMPHOBLASTIC LEUKEMIA PATIENTS TREATED WITH MRD BASED PAEDIATRIC INSPIRED PROTOCOL IN COMPARISON WITH NON MRD BASED REGIMENS; SINGLE CENTRE STUDY

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OBJECTIVE

Acute lymphoblastic leukemia (ALL) is an aggressive but potentially curable malignancy. Outcomes, however, in low- and middle-income countries remain suboptimal. Local data describing long-term survival and predictors of outcome are limited. International data have shown significant improvement in survival with paediatric- inspired protocols and critical prognostic role of MRD. We aimed to analyze and compare the outcomes of AYA patients with B-ALL treated with paediatric inspired MRD based protocol with non-MRD based treatment regimen at a tertiary cancer hospital in Pakistan.

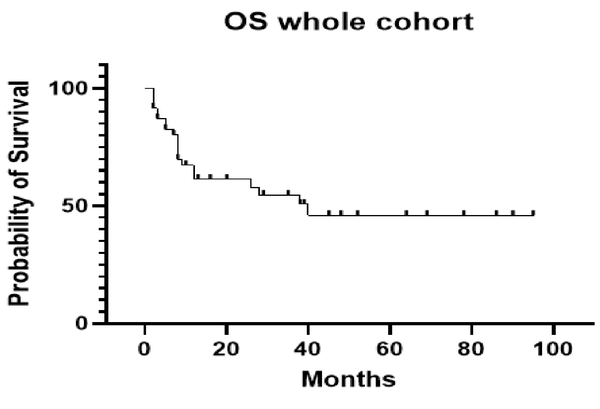
METHOD

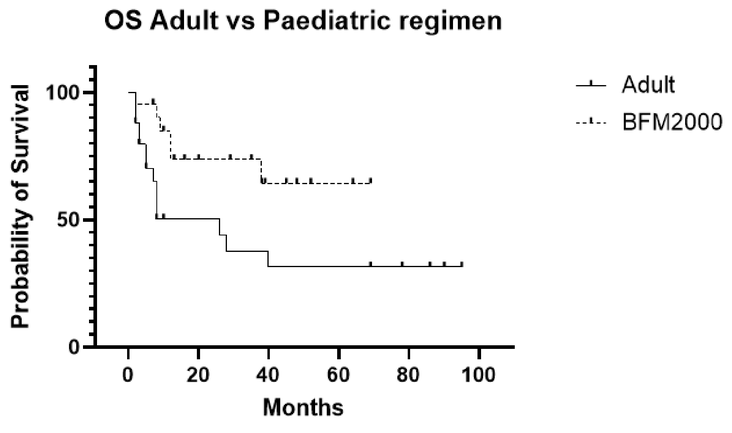
We retrospectively reviewed the records of patients diagnosed with ALL between [2014–2020]. Baseline demographics, cytogenetic and molecular results, treatment regimens, response rates, relapse rates and mortality outcomes were analyzed in 2 treatment groups for comparison. Descriptive statistics were used for patient characteristics.

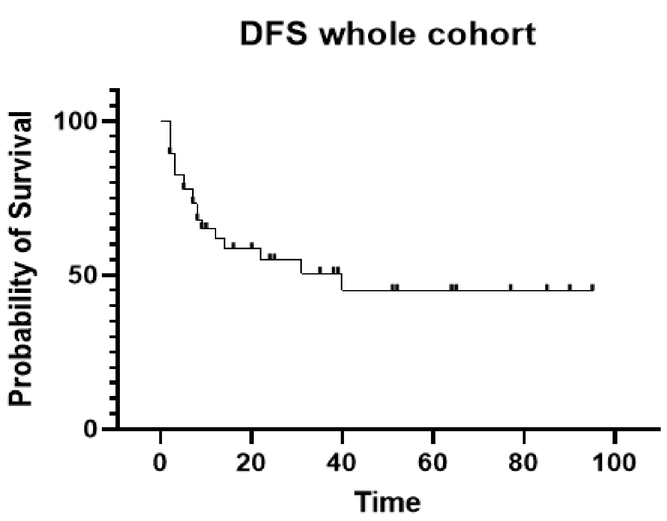
RESULTS

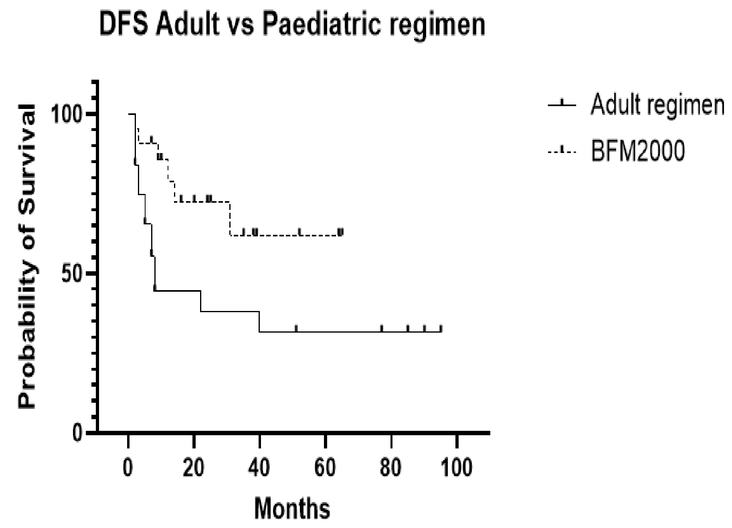
A total of [n = 47] patients were included. Median age was 22 years (range 19-34). Overall, male to female ratio was 2.5. Normal karyotype was observed in 42.55% and abnormal in 55.31% patients. Philadelphia chromosome was positive in 12.76% and MLL gene rearrangements were not present in any of the cases. White cell count at the initial presentation ranged between 0.79 to 9.8. Treatment regimens included BFM 2000 (48.93%), HCVAD (40.42%) and UKALL-based protocols (10.63%). Out of all the Philadelphia positive patients, 66.66% received TKI while 33.33% did not received any TKI. The post Induction complete remission rate with BFM2000 and HCVAD was 91.3% and 58.3% respectively. In the BFM2000 group, the measurable residual disease (MRD) negative CR rate post Consolidation 1B was 64.3%. The mortality rate in BFM 2000 and HCVAD group was 26% and 62.5% respectively. The relapse rate in BFM2000 was 26.08% while no relapse case reported in HCVAD group. Out of all the mortalities, cause of death in BFM2000 was disease relapse in 50% and treatment related toxicity in 50% while in HCVAD group it was disease relapse in 25% and treatment related toxicity in 75%. Median overall survival is 38 months while median follow up is of 10 months.

Two year OS is 61.3% and 5 year OS is 46%. Disease Free survival (DFS) for 2 year is 54.7% and 5 year is 44.9%. The p-value is 0.0134 for OS in adult vs paedriatric base regimen which is significant, while the hazard ratio is 2.943 with 95% CI of 1.188 to 6.923, calculated by using longrank test. The p-value is 0.0118 for DFS in adult vs paedriatric base regimen which is significant, while the hazard ratio is 2.830 with 95% CI of 1.173 to 6.828, calculated by using longrank test.









CONCLUSION

Our study reveals that mortality rates and survival outcomes are better with paediatric inspired MRD based protocol (BFM 2000). Treatment toxicity related deaths were higher in HCVAD group. MRD-based paediatric inspired protocols reduce toxicity and improve survival of AYA B-ALL patients.