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*abstract*

## **Mixed Chimerism in Haploidentical Related Donor Stem Cell Transplantation in Children with Acute Leukemia: Does it Predict the Relapse of Primary Disease?**

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# Mixed Chimerism in Haploidentical Related Donor Stem Cell Transplantation in Children with Acute Leukemia: Does it Predict the Relapse of Primary Disease?

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**Introduction:** Allogeneic hematopoietic stem cell transplantation (HSCT) from an HLA-haploidentical related donor is a suitable option for children with acute leukemia who require HSCT. We aimed to evaluate the association between the lowest sequential mixed donor chimerism (MC; 100% in both lineage vs. <100%) to the relapse of primary disease and survival.

**Methodology:** 33 patients (F: 14, M:19) underwent allogeneic HSCT from 2017 to 2021; 14(42.4%) with ALL and 19(57.6%) with AML. Median CD34+ cell dose was  $7.125 \times 10^6$  per kg (2.1-12.0). All patients received GVHD Prophylaxis and myeloablative conditioning (XRT: 10, 30.3%) which included Bu,Flu,Thiotepa: 12 (36.4%), ATG,Bu,Flu,Thiotepa: 11 (33.3%) and Flu,TBI in 10 (30.3%).

**Results:** In the first year post-HSCT, MC was seen in 6 (18.2%) of 33 cases. Four of these patients died in MC (one 1 within Day+100, three beyond Day+100).

Remaining two males with MC were alive. Rate of MC after 3rd year of transplant was 13.3%; 2 out of 15 were alive without graft failure or relapse of primary disease. Remaining 13 patients with FC were alive without relapse.

At a median follow-up of 48.7 months (95% CI: 25.2-72.2 months) and a mortality rate of 33.3% (11 deaths), cumulative probability of five-year overall survival from infusion was  $66.4\% \pm 8.3\%$ . It was significantly better in FC recorded year+1 ( $73.7\% \pm 8.5\%$ ; 7 events of 27) compared to MC ( $33.3\% \pm 19.2\%$ ; 4 events of 6,  $P=0.016$ ). Similarly, cumulative probability of five-year event-free survival (event: relapse or death) was significantly better in FC group ( $73.7\% \pm 8.5\%$ ; Relapse: 4, Death before relapse: 3) compared to MC group ( $33.3\% \pm 19.2\%$ ; Relapse: 3, Death before relapse: 1;  $P=0.011$ ).

**Conclusion:** The lowest sequential mixed donor chimerism in year+1 post-HSCT being a predictor of overall and event- free survival.