Pakistan's First Public Pediatric Bone Marrow Transplant Center: Overcoming Challenges and Key Outcomes from the Initial 100 Transplants. .

Authors, Syed Nasir Abbas The Children Hospital and UCHS lahore pakistan
H.Asghar, Um e maria ,Hira Jameel,
1. The Children Hospital and University of Child helath Sciences lahore

Introduction

Stem cell transplantation (SCT) began in Pakistan in 1995 under Dr. Tahir Shamsi. Due to high costs, it remained limited until 2019, when Children's Hospital Lahore established a center using limited resources and portable HEPA filters. Training at NIBD Karachi enabled the recruitment of skilled, trained personnel .

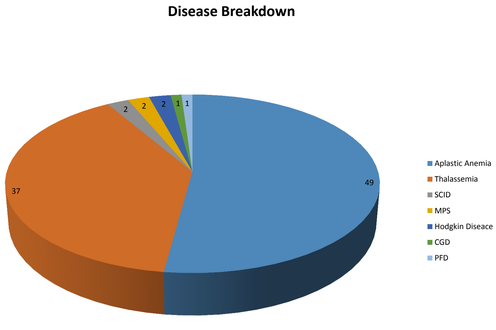
Material and Methods

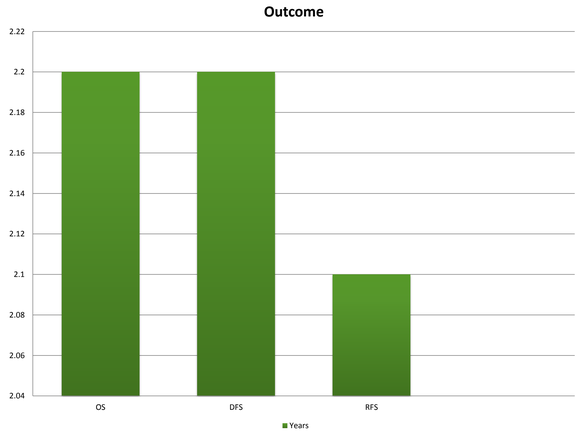
A retrospective analysis was conducted on the first 100 transplants performed at Children's Hospital Lahore. The study assessed the challenges in establishing the BMT center, along with overall survival, disease-free survival, relapse rates, non-relapse mortality, acute GVHD (Grades I-IV), chronic GVHD, and infection rates. Disease and transplant-related factors were compared between groups using the chi-square test for categorical variables. The median follow-up duration was estimated using the reverse Kaplan-Meier method. Statistical analyses were performed using SPSS version 14, with significance defined as p<0.05."

Results

From July 2019 to January 2024, 100 transplants were performed, comprising 49 cases of aplastic anemia, 37 of thalassemia, 5 of Fanconi anemia, 3 of SCID, 2 of MPS, 2 of Hodgkin's disease, and 1 case each of GT and CGD. For aplastic anemia, the conditioning regimen included fludarabine and cyclophosphamide, while busulfan, cyclophosphamide, fludarabine, and ATG were used for thalassemia. Of the patients, 98 had 6/6 donor matches, and all transplants were provided at no cost.

The median patient age was 8.2 years, with 58% being male (n=58). Graft sources were peripheral blood stem cells in 52% of cases and bone marrow in 48% (n=48). The median follow-up duration was 578 days (95% CI: 380-1245). The median overall survival (OS), disease-free survival (DFS), and relapse-free survival (RFS) were 2.2 years, 2.1 years, and 2.1 years, respectively. Acute GVHD (Grades I-IV) occurred in 27% (n=27), chronic GVHD in 21% (n=21), infections in 13% (n=13), and relapse or mortality in 12% (n=12) of the cases.The most significant challenge faced was staff retention, with 32% of the trained staff leaving during this period, followed by financial constraints and maintaining a consistent supply of medications.





Conclusion

With administrative support, a dedicated team, and commitment, bone marrow transplants can be successfully carried out in government hospitals, yielding comparable results.