Effect of graft source on safety and efficacy in patients undergoing hematopoietic stem cell transplantation

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INTRODUCTION

Donor availability remains a major challenge in allologeneic stem cell transplantations (HSCT). For patients who cannot find an HLA-matched sibling donor, current standard of care is a fully matched unrelated donor (MUD). However, not for all a MUD can be found and additional alternatives such as single locus unmatched unrelated donors, umbilical cord blood or haploidentical donors are used. Each alternative donor source and transplant regimen has its specific pros and cons. In this retrospective study we collected transplant outcome data from different alternative donor transplants and compare these against the standard of care.

RESULTS

CONCLUSION

Our data show that the current alternatives (MMUD, UCB or CD34-HAPLO) have a worse outcome compared to standard of care (MUD). Use of MMUD or UCB donors shows higher rates of GVHD and NRM. Use of T-cell depleted haploidentical donors has substantially less GVHD, but more infections and thus much higher rates of NRM. On the GRFS endpoint all alternative donor sources perform poorly compared to MUD, as GVHD remains a major issue in the CD34-HAPLO group (11%) compared to the other groups (MUD: 39%; MMUD: 30%; UCB: 55%).

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MATERIALS & METHODS

In this retrospective, multicenter study (CR-AIR-006; NCT02188290) data was collected on outcome of HSCT in patients with AML or ALL (both in remission) or MDS, using either a fully matched (8/8 or 10/10) unrelated donor (MUD), a single-locus mismatched (9/10) unrelated donor (MMUD), umbilical cord blood (UCB) or a haploidentical (3/6, 4/6, 5/10, 6/10) donor (CD34-HAPLO). Transplantations were performed between January 2010 and January 2013 (MUD, MMUD, UCB) or between January 2006 and July 2013 (CD34-HAPLO). Haploidentical donor transplantations were conducted using myeloablative conditioning and a T-cell depleted (CD34+ selection) graft. Non-relapse mortality (NRM) and overall survival (OS) up to 12 months post HSCT were compared between the four groups. In addition, incidence and severity of acute and chronic graft versus-host disease (GVHD) up to 12 months post HSCT was compared between groups. To determine clinical benefit of each transplantation regimen a composite end-point of GVHD-free, Relapse-Free Survival (GRFS) was used.

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Conflict of Interest statement

SM, JS, OS, PL, JR, DCK, GJ, SG, JG and DM have received research funding and/or travel grants from Kiadis pharma. LD, KM, MM and IR are employees of Kiadis pharma. RR and JB have personal financial interest in Kiadis pharma.

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CONCLUSION

Our data show that the current alternatives (MMUD, UCB or CD34-HAPLO) have a worse outcome compared to standard of care (MUD). Use of MMUD or UCB donors shows higher rates of GVHD and NRM. Use of T-cell depleted haploidentical donors has substantially less GVHD, but more infections and thus much higher rates of NRM. On the GRFS it is clear that MUD transplantations have the best outcome, and that all other alternative donor sources have a low GRFS at 1-year post HSCT.

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