Preparing people to lead extraordinary lives

Successful Salvage HLA Haploidentical Stem Cell Transplant following Two Primary Graft Failures with Cord Blood Transplantation in a Patient with Acute Myeloid Leukemia

Tony Kurian, Patrick Stiff
Loyola University Medical Center, Maywood, IL

Preparing people to lead extraordinary lives

Introduction:

- Primary graft failure poses a serious clinical challenge following cord blood transplantation (CBT). Rate of graft failure following CBT is as high as 20% compared to 7% following matched-unrelated donor (MUD) bone marrow transplantation.
- Salvage therapies are limited as patients who receive CBT typically lack matched-related or unrelated donors. As the use of alternative sources of hematopoietic stem cells increases, clinicians will need to improve strategies of salvage therapy following graft failure.
- We report a case of successful salvage HLA Haploidentical stem cell transplantation (haplo-SCT) following two primary graft failures with CBT in a patient with acute myeloid leukemia (AML).

Case Presentation:

- The patient is a 47 year old man with AML FLT3-ITD and inv(16) who underwent conditioning with Busulfan and Cyclophosphamide followed by CBT two months after diagnosis.
- Clinical course was complicated by primary graft failure and neutropenic fever secondary to VRE and Staphylococcus epidermidis bacteremia.
- He underwent subsequent conditioning with Fludarabine followed by salvage treatment with CBT 33 days after initial CBT. This was complicated by failed engraftment.
- He subsequently underwent conditioning with rATG followed by Fludarabine and then received a second salvage treatment with a haplo-SCT from his son 64 days following initial CBT (31 days following salvage CBT).
- He received Cyclophosphamide 50 mg/kg on day +3 and day +5. GVHD prophylaxis consisted of Tacrolimus and Mycophenolate. Patient achieved neutrophil engraftment (ANC > 500) on day +16.
- A post-chimerism performed on day +13 showed > 98% donor. Bacteremia cleared on Day +15 and patient was switched to an oral antibiotic regimen.
- The patient was discharged home and is alive and continues to be in complete remission on most recent follow up appointment 9 months following initial CBT.

Discussion:

- Successful salvage CBT and haplo-SCT have been reported following graft failure
- Interestingly, graft failure has been reported up to 12% following haplo-SCT and 20% following CBT, although data remains quite limited
- This report illustrates successful salvage haplo-SCT following two primary graft failures with CBT in a patient with AML.
- This suggests haplo-SCT may represent a favorable salvage treatment approach compared to CBT.

Future Directions:

- As the use of alternative sources of hematopoietic stem cells such as haplo-SCT and CBT increases, strategies for salvage therapy following graft failure require further investigation.

References:

1. Yoshihara S, Ikegame K, Taniguchi K, et al. Salvage haploidentical transplantation for graft failure using reduced-intensity conditioning. Bone Marrow Transplant. 2012;47(3):369-73.
2. Anasetti C, Amos D, Beatty PG, Appelbaum FR, Bensinger W, Buckner CD et al. Effect of HLA compatibility on engraftment of bone marrow transplants in patients with leukemia or lymphoma. N Engl J Med 1989; 320: 197-204.
3. Laughlin MJ, Eapen M, Rubinstein P, Wagner JE, Zhang MJ, Champlin RE et al. Outcomes after transplantation of cord blood or bone marrow from unrelated donors in adults with leukemia. N Engl J Med 2004; 351: 2265-2275.
4. Rocha V, Labopin M, Sanz G, Arcese W, Schwerdtfeger R, Bosi A et al. Transplants of umbilical-cord blood or bone marrow from unrelated donors in adults with acute leukemia. N Engl J Med 2004; 351: 2276-2285.