DONORS: The Silent Heroes

Reggie Belkhedim
BMT Coordinator
EMBMT NG President
EBMT CNC Chairperson

14-17 MAY 2015 | CASABLANCA, MOROCCO
The donor has been identified as a match and agrees to donate hematopoietic stem cells...

- What are the resources of stem cells?
- What do we expect from donors?
- Why we can’t use all donors? (Eligibility)
- How does the donation impact the donor?
- What do the donors expect from us?
- Ethical aspects (in Saudi Arabia)
- Social aspects (in Saudi Arabia)
STEM CELL DONORS...

Can either be...

- Related matched donors
- Unrelated matched donors
- Umbilical Cord blood units

And recently...

- Mismatched related donors (Haplo-identical donors)
DONORS’ ELIGIBILITY CRITERIA

The primary goal is to determine if the donor is in good health in order to:

• Protect the donor from the risk of damage to his/her own health

• Protect the recipient from transmissible diseases
DONORS’ SELECTION CRITERIA

- HLA compatibility – many (most) patients have a single best donor
- Gender
- Age
- Results of infectious disease testing (CMV)
- Previous antigen exposure
- Weight
- Type of stem cell donation
CARE BEFORE THE COLLECTION PROCEDURE

• Health questionnaire
• Careful medical history
• Laboratory tests/EKG/Chest X-Ray.
• A comprehensive health screening.
• physical exam: focusing on conditions that might increase risk of known adverse events.
PHYSICAL EXAM

• Focus on neurologic, respiratory, cardiovascular systems
• Bone marrow harvest: oral airway, musculoskeletal
• Leuk-apheresis: venous access, splenomegaly
DONOR EVALUATION –
RISKS TO THE RECIPIENT:

• Transmissible infections:
  ▪ Absolute contraindication to donate: HIV
  ▪ Relative contraindication to donate: Hepatitis B, C.
  ▪ Not a contraindication but may modify treatment: Toxo, Brucella, EBV, CMV, West Nil virus.

• Genetic diseases
CARE DURING THE COLLECTION PROCEDURE

Bone marrow harvest:

- Type of anesthesia
- Autologous blood transfusion
- Need for intravenous fluids
- Postoperative management
CARE DURING MOBILIZATION & COLLECTION PROCEDURE:

Peripheral blood stem cell harvest:

- G-CSF treatment and complications
- Apheresis and complications
- Need for central venous access (0-10%, F>M)
- No need for blood transfusion
RISKS & ADVERSE EVENTS ASSOCIATED WITH DONATION:

- Donation is a reasonably safe procedure but adverse events can occur.
- Life-threatening adverse events occur in 0.3-0.4% of donors.
- Odds of dying – <1/10,000
- Most donors report symptoms – important that donors have reasonable expectations.
- Types of symptoms depend on method of collection (BM vs. PB)
RISK FACTORS FOR SERIOUS COMPLICATIONS

- Un-identified risk factors
- Collection duration
- Type of anesthesia
- Donor age
- Donor sex
- Donor weight
BONE MARROW HARVEST - EVENTS & ADVERSE EVENTS:

• Common (20-85%):
  fatigue, collection site pain, back pain, nausea, sore throat, headache, emesis IV site pain

• Less Common (<20%):
  fever, bleeding, syncope, unexpected hospitalization, minor infections, hypotension, chipped teeth, urinary retention, post headache.
BONE MARROW HARVEST-
EVENTS & ADVERSE EVENTS:

• Serious (1%): seizure, bacteremia, abscess, prolonged pain, neuropathy, prolonged hospitalization

• Life-threatening/Incapacitating (0.3%) myocardial infarction, anaphylaxis, prolonged paralysis after anesthesia, pulmonary embolus, transfusion events (anaphylaxis, acute renal failure, hepatitis), malignant hyperthermia, pulmonary edema, arrhythmias, stroke, severe pain
SYMPTOMS POST BONE MARROW DONATION:

Symptoms after bone marrow donation

- Tired
- Site Pain
- Back Pain
- Nausea
- Sore Throat
- Pain Sitting
- Dizziness
- Headache
- Vomiting
- IV Site Pain
- Fever
- Bandage Pain
- Bleeding
- Fainting

CIBMTR
Recovery after bone marrow donation

- >4 weeks: 13%
- 2-4 weeks: 24%
- <2 weeks: 63%

CIBMTR
9,345 Total Donations

125 Serious Events
1.34%

CIBMTR
PERIPHERAL STEM CELL COLLECTION:
SYMPTOMS POST PBSC DONATION:

Symptoms after blood stem cell donation

- Myalgia
- Headache
- Malaise
- Insomnia
- Nausea
- Sweats
- Other Flu Sxs
- Anorexia
- Fever
- Chills
- Vomiting

CIBMTR
SYMPTOMS DURING MOBILIZATION:

PBSC Donor Symptoms during filgrastim administration, n = 1080

- Vomiting
- Chills
- Fever
- Anorexia
- Other flu-like
- Sweats
- Nausea
- Insomnia
- Malaise
- Headache
- Myalgia
- Bone pain

CIBMTR
RARE EVENTS WITH G-CSF MOBILIZATION

- Splenic rupture – 5 cases
- Flare of autoimmune disorders
- Inflammatory eye disorders
- Precipitation of Sickle Cell Anemia or complex sickle cell crisis
- Prolonged neutropenia
LONG TERM EFFECTS OF G-CSF

• Theoretical concern for development of hematologic malignancy:

  – In cases with Kostmann’s patients, after 12 years of G-CSF treatment 8% risk of progression to MDS/AML
ETHICAL ISSUES:

- **Sibling donors**
  - Unwillingness to donate

- **Older donors**
  - Limited data on safety
  - Consider co-morbidity

- **Donor health**
  - Weigh the chance to cure the patient vs. the donor risk.
ETHICAL ISSUES:

• Pediatric Donors:
  - Parental consent
  - Consider Psychosocial issues
  - Limited Data available about the safety
  - Consider that life threatening complications rate similar to adults

• Donors as research subjects:
  - Donor genes/donor cells
  - Experimental transplantations
SOCIAL ISSUES:

• Female/married donors
• Religious consideration
• Interruption of daily activities
• Misconceptions about donation
  - Paralysis
  - Infertility
  - Disease transmission
SUMMARY:

• HSC donation is safe procedure
• All donors must be carefully evaluated and fully informed of potential complications.
• Serious adverse events are rare.
• PBSC donation is increasing
• Long term follow up after donation is necessary.
REFERENCES

- Locasciulli, A., Testa, M., & Valsecchi, M. (1999). The role of Hep-C & B virus infection as a risk factor for severe liver complications following allo BMT.
- World Marrow Donor Association - www.worldmarrow.org
- National Marrow Donor Program – www.marrow.org
- Center for International Blood and Marrow Transplant Research – www.cibmtr.org
If there be any truer measure of a man than by what he does, it must be by what he gives.

Robert South

Thank you