

# **DONORS: The Silent Heroes**

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# OUTLINE

The donor has been identified as a match and agrees to donate hematopoieteic 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 (Haploidentical 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</li>
- 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%):</li>

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





# Recovery after bone marrow donation









#### **PERIPHERAL STEM CELL COLLECTION:**





#### **SYMPTOMS POST PBSC DONATION:**

#### Symptoms after blood stem cell donation



CIBMTR



#### **SYMPTOMS DURING MOBILIZATION:**





#### **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

- Metha, P. (2004). Pediatric stem cell transplantation.
- Ezzon, S., Schmit-Pokorny, K. (2007). Blood and marrow stem cell transplantation.
- Mazzone, P., Carlos, J., & Orroliga, A. (2005). Pre-transplant pulmonary evaluation of the blood and marrow transplant recipient.
- 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.
- Syrjala, K., Dikmen, S. & Langer, S. (2004). Neuropsychologic changes from before transplant to 1 year in patients receiving myeloablative stem cell transplant.
- 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** 

