A comparison of stem cell source in adult and paediatric recipients of T-cell depleted myeloablative transplants for standard risk leukaemia: no difference in mortality using BM or PBSC

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Introduction

- The use of GCSF-mobilised Peripheral Blood Stem Cells for unrelated donor transplantation has increased dramatically since 2000
- Early studies found that PBSC was associated with: more rapid engraftment than BM, an increase in chronic GvHD, but no differences in survival
- More recent studies have shown
  - Increased TRM and decreased survival in children with acute leukaemia transplanted using myeloablative, T cell replete protocols (Eapen, JCO, 2004)
  - A worse survival in adults with CML in CP transplanted using myeloablative, T cell replete protocols (Eapen, BBMT, 2007)

Hypothesis

We speculated that the impact of PBSC compared to BM may differ in recipients of T cell depleted transplants, since in this setting the incidence of GvHD has been shown to be reduced

Study cohort

The BSBMT and ANT databases were search to find patients who met the following criteria:

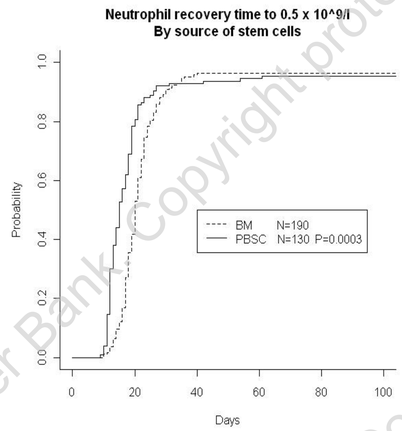
- Unrelated donor transplant
- 2000 - 2007
- Myeloablative conditioning
- Standard risk leukaemia eg AML and ALL in CR1 and CR2 and CML in CP
- HLA matched
- Pre-transplant serotherapy with Campath (anti-CD52 antibody) or ATG antibodies

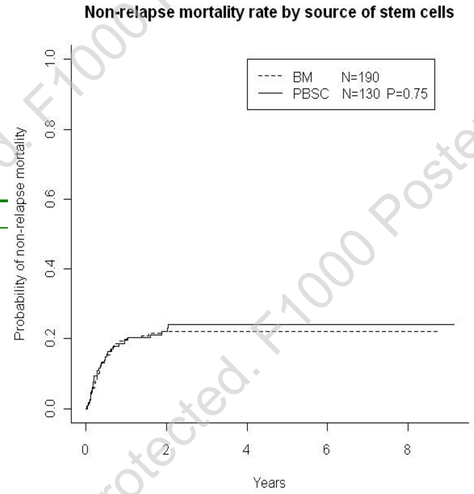
Patient demographics BM vs PBSC

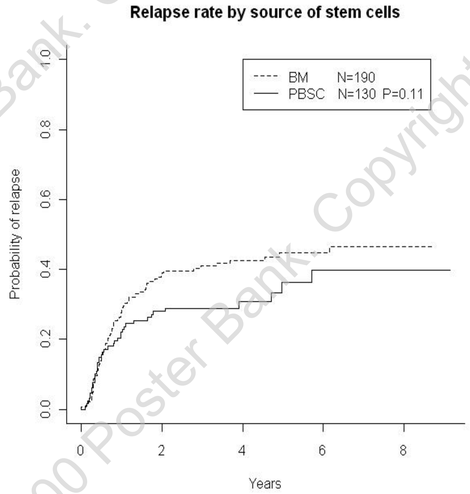
Variable	BM (n=190)	PBSC (n=130)	P value
Patient age (median, range)	28 (1-54)	30 (<1-58)	0.426
Patient gender			
Male	120	77	0.485
Female	70	53	
Donor gender			
Donor M, recipient M	87	60	0.497
Donor M, recipient F	48	32	
Donor F, recipient M	24	14	
Donor F, recipient F	18	20	
Unknown	13	4	
Diagnosis			
AML	68	46	0.051
ALL	53	52	
CML	69	32	
Stage			
AL: CR1	64	64	0.014
AL: CR2	56	34	
CML: CP1	70	32	
T cell depeletion			
Campath (Alemtuzumab)	184	122	0.266
ATG	6	8	
CD34+ cell dose (median, range)	2.9 (0.24 – 21.6)	5.83 (0.77 – 27.4)	<0.001

Results

- Data on 320 patients were collected (BM=190, PBSC=130)
- Median follow-up was 48 months (range: 3-110)
- The incidence of graft failure was low overall:
  - BM: 8 (4%)
  - PBSC: 3 (2%)
  - P=0.306

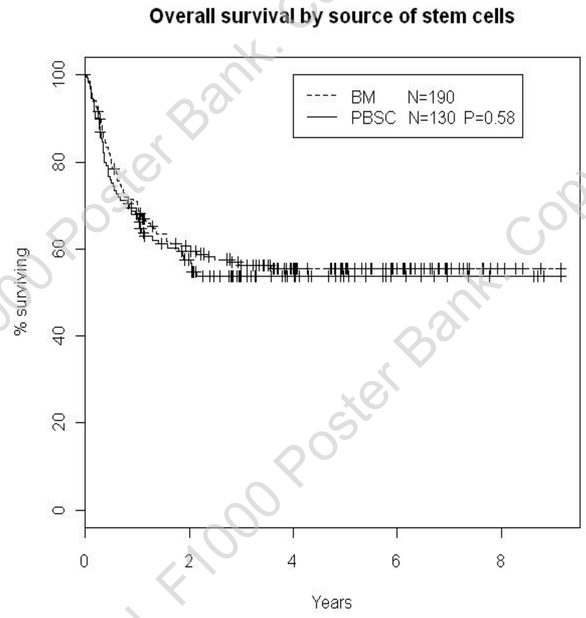


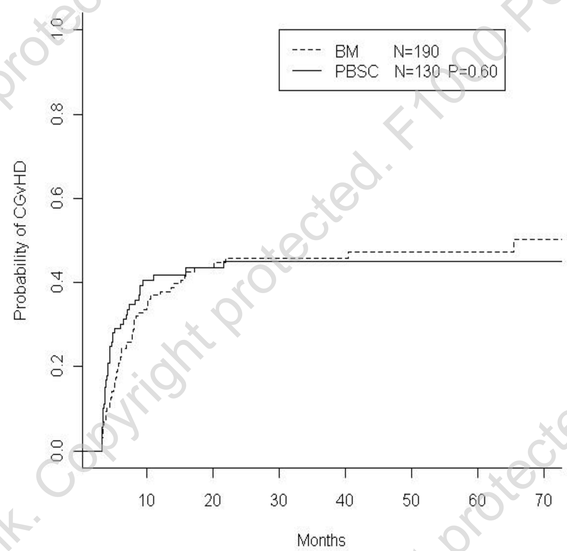




Acute Graft versus Host Disease

Acute GvHD	BM	PBSC	P value
Present	96 (51%)	83 (64%)	0.022
Grade I	49 (53%)	50 (60%)	
Grade II	36 (39%)	25 (30%)	
Grade III	6 (7%)	5 (6%)	0.420
Grade IV	1 (1%)	3 (4%)	
Unknown grade	4	0	





Conclusions

- We compared the outcome of 320 patients with leukaemia, transplanted using T cell depleted, myeloablative protocols depending on the use of BM or PBSC. We found:
  - A higher incidence in the occurrence (but not grade) of acute GvHD
  - No difference in NRM or survival
  - No difference in the incidence of chronic GvHD
- We suggest that either stem cell source can be used with a similar outcome in adult and paediatric recipients of T-cell depleted allografts for standard risk leukaemia.

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Disclosure: No relevant conflicts of interest to declare