Impact of Stem Cell Source on Outcome of Allogeneic Stem Cell Transplantation in Pediatric Cancer

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Rationale and Background)

Allogeneic hematopoietic stem cell transplantation is an established option of therapy for many malignant and non-malignant diseases which involve the hematopoietic and immune systems.

The number of patients eligible for this procedure is continuously increasing due to better supportive care and the developments in alternative donors and stem cell sources.

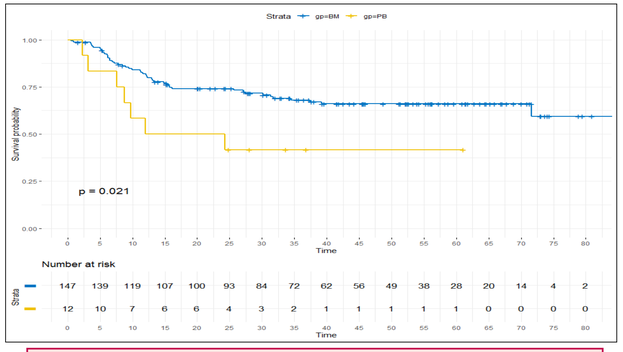
Materials & Methods

- A retrospective study included 159 patients transplanted at the bone marrow transplantation unit, children cancer hospital Egypt (CCHE) 57357.
- All patients with high-risk hematological malignancies were considered eligible. The stem cell source obtained for these patients was either bone marrow (BM) or peripheral blood (PB).
- HLA matching was either matched related donor (MRD) or a haploidentical transplant. The impact of stem cell sources on the outcome of these patients was analyzed.

Results

- BM was the most commonly used graft source in 92.5% of cases with OS of 81.9% and EFS of 70.9%. PB was only used in 7.5% with 50% OS and 33.3% EFS (P value =0.021). MRD was used in 86% of patients, while 10.1% received their allograft from haploidentical donors. At the end of the study 64.8% of the patients were alive, 34.6% died while only one patient lost follow up. With median duration of follow up of 64 months, the 3-year overall survival of the whole patients was 64%

Characteristics	Parameter	Number (%)
Patients Gender	Female	58 (36.5%)
	Male	101 (63.5%)
Age at time of SCT.	Mean (SD)	9.3
	< 6	55 (34.6%)
	6 – 11	42 (26.4%)
	11 or more	62 (39.0%)
Diagnosis	Acute Lymphoblastic Leukemia	30 (18.8%)
	Acute Myeloid Leukemia	45 (28.3%)
	CML	30 (18.9%)
	HLH	3 (1.9%)
	JMML	22 (13.8%)
	MDS	13 (8.2%)
	MPAL	6 (3.8%)
	MPD	1 (0.6%)
	Neuroblastoma	1 (0.6%)
	Non-Hodgkin's lymphoma	5 (3.1%)
	Therapy Related ALL	1 (0.6%)
	Therapy Related MDS/AML	2 (1.2%)
Donor`s gender	Female	65 (40.9%)
	Male	94 (59.1%)



3 years OS in relation with stem cell source

Risk factor	Prognostic factor	OS	p-value	Lower-CI	Upper-CI
Stem Cell Source	BM	81.9%	P= 0.021	75.831	88.446
	PB	50%		28.395	88.042

Conclusion

Bone marrow has a better survival outcome as a source of stem cell in allogeneic SCT than peripheral blood .However , it should be noted than PB SCT was used in Juvenile myelomonocytic leukemia patients which is known to have the worst outcome when transplanted

Referrences

Bollard CM, Krance RA, and Heslop HE (2011) : Hematopoietic stem cell transplantation in pediatric oncology. In D. G. P. Philip A.Pizzo (Ed.), Principles and practice of pediatric oncology

Couban S, Simpson DR, Barnett MJ, Bredeson C, Hubesch L, Howson-Jan K, Shore TB, Walker IR, Browett P, Messner HA, (2002) A randomized multicenter comparison of bone marrow and peripheral blood in recipients of matched sibling allogeneic transplants for myeloid malignancies. Blood; 100:1525–1531

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