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The Use of Donor Mesenchymal Stem Cells in the Treatment of Steroid Refractory Graft Versus Host Disease. Ten Years of Single Center Experience

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Short Communication

During the years 2003-2012 there were 94 sibling allogeneic stem cell transplants (alloTx) performed at the National Cancer Institute, Bratislava, Slovakia. From them 43 (46%) patients were treated with reduced intensity conditioning (RI) and 10 (11%) patients received a HLA haploidentical graft. Eight patients (8.5%) developed steroid refractory graft versus host disease (GVHD). After obtaining a general approval from Ethics Committee, all 8 patients had been eligible for the infusion of freshly prepared *ex vivo* expanded mesenchymal stem cells (MSC). The MSC for *ex vivo* expansion were isolated from the bone marrow of the sibling donor and expanded according to Koç, et al. [1]. The patients' characteristics are shown in the Table 1. The mean number of the MSC infused was $0.4x10^6$ cells per kg of body weight. (Range $0.3\text{-}0.5x10^6$ cells/kg). Two patients (No 5 and 7) received the MSC twice. Four patients died because of refractory GVHD. From the other 4 patients, two died because of the disease progression, one because of the fungal infection and one is alive up to 10 years after alloTxin complete remission without any signs of cGVHD. It should be noted that all patients were heavily pretreated but the last one who is alive, with more than 5 lines of chemotherapy including autologous stem cell transplantation. Nevertheless, the steroid refractory GVHD resolved in half (4) of them. Moreover it seems to be plausible to have the MSC "in stock" for rapid *ex vivo* expansion in order to use the cells freshly prepared (not frozen, thawed and immediately applied) [2].

References

1. Koç O, Gerson S, Cooper B, Dyhouse SM, Haynesworth SE, Caplan AI, et al. Rapid hematopoietic recovery after co-infusion of autologous culture-expanded human mesenchymal stem cells (hMSCs) and PBPCs in breast cancer patients receiving high dose chemotherapy. J Clin Oncol. 2000; 18: 307-316.

2. Lakota J. Unpublished observation.

Table 1: Patients'characteristics, date of transplantation, MSC infusion, date of the patients' death and the reason of death (Haplo Tx: HLA Haploidentical Transplantation; RI Tx: Reduced Intensity Conditioning Transplantation).

Patient No	Gender	Born	Diagnosis	Transplantation	MSC infusion	Death	Reason of death	Comment
1	M	1971	AML	16.03.04	d +206	09.11.04	cGvHD	
2	M	1976	HD	30.01.05	d +1	14.02.05	aGvHD	Haplo Tx
3	M	1971	ALL	13.12.05	d +9	05.04.06	disease progression	
4	F	1970	Ph- CML	26.04.07	d +33	-	alive (31.12.16)	
5	F	1978	HD	13.10.09	d +60, d+80	23.02.10	aGvHD	RI Tx
6	M	1969	ALL	23.02.10	d +168	16.08.10	cGvHD	
7	F	1973	HD	21.10.10	d +92, d+178	22.09.11	infection	Haplo□Tx
8	M	1987	HD	18.10.11	d +43	09.04.13	disease progression	RI Tx

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