

Evaluation of Peripheral Blood Stem Cell Mobilization and Collection in Elderly Patients

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Introduction: Adequate hematopoietic stem cell mobilization and collection is essential for patients who are candidate for autologous stem cell transplantation. In this study we compared mobilization success rates, amount of collected stem cells and the factors that could affect the procedure for patients younger and older than 60 years old.

Materials (or patients) and methods: For this study, 112 patients who admitted to Erciyes University BMT Center for autologous stem cell transplantation were enrolled. Thirty-seven of them (36%) were under 60 years called young group and 75 of them (%64) over 60 years called elderly group. Among the participants, 73 of them were multiple myeloma, 23 of them Non-Hodgkin's lymphoma, 17 of them Hodgkin's lymphoma. Between the groups we compared the amount of pre-apheresis white blood cell (WBC), platelets, peripheral CD34+ cells, value of collected CD34+ cells and mononuclear cells, mobilization failure and success rates and number of apheresis sessions.

Results: The median values of pre-apheresis peripheral CD34+ cells were 8,72 / μ l and platelets were 86×10^9 /L in young group; CD34+ cells were 8,95/ μ l and platelets were $86,5 \times 10^9$ /L in elderly group ($p=0,918$, $p=0,899$). The median values of collected CD34+ cells were $7,61 \times 10^6$ /kg (2,52-46,62) and $7,60 \times 10^6$ /kg (2,87-25,50) in under and over 60 years, respectively ($p=0,800$). Also the median values of total collected mononuclear cells (MNC) were $1,41 \times 10^7$ /kg and $1,4 \times 10^7$ /kg in young and elderly group ($p=0,607$). It was found as 1,89 days in elderly group and 1,7 days in young group when we compared their apheresis sessions ($p=0,786$). There was no statistically significance between two groups; despite the mobilization failure rates were 18 % and 6 % in patients older and younger than 60 years ($p=0,087$).

On the other hand, the number of multiple myeloma in the patients with applied autologous stem cell mobilization was higher in elderly patients than young ones ($p=0,004$) and we also demonstrated that the failure of mobilization were lower in patients with multiple myeloma than lymphoma patients ($p=0,003$). There was no significant difference between the amounts of pre-apheresis WBC, platelets and peripheral CD34+ cells in mobilization failure group and success group.

Discussion: We demonstrated that the amount of pre-apheresis peripheral or collected CD34+ cells and numbers of apheresis sessions are not significantly different in comparison of the young and elderly patients who are planned autologous stem cells transplantation. Mobilization failure rate was higher in lymphoma patients than myeloma patients. It was also found that mobilization failure rates were higher in elderly patients than young patients.

		Total	<60years	>60years	P value
Number of patients (%)		112	37(33)	75(67)	
Age	Mean		41	65	
Pre-apheresis	WBC (median)		8.95	8.72	0.918
	PLT (median)		86	86.5	0.899
	CD34+ Cell (μ l)		8.72	8.95	0.918
Collected	CD34+ Cell ($\times 10^6$ /kg)		7.61	7.60	0.800
	MNC ($\times 10^7$ /kg)		1.41	1.40	0.607
Apheresis sessions (day)			1.7	1.89	0.607
Mobilization failure (%)			2(6)	13(18)	0.087