Heart rate and Borg scale is associated with exercise-tolerance time after transplantation in allogeneic hematopoietic stem cell transplantation patients

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Background and aims

- We analyzed the results of the exercise-tolerance test, performed before and after transplantation, in patients who had undergone allogeneic hematopoietic stem cell transplantation (allo-HSCT)
- Furthermore, we investigated the relationship between Heart Rate (HR), Borg scale, and exercise-tolerance watts in allo-HSCT patients before and after transplantation.

Methods

1. Exercise tolerance test

2. Measurement period

Participants

Demographic and clinical characteristics of HSCT patients (n = 28)

Characteristics		
Age		41.5 (18-60)
	Sex	
Sex	Men	19 (67.9)
	Women	9 (32.1)
Height (cm)		166.2 (9.5)
	Body weight (kg)	59.5 (15.3)
Diagnosis	Acute leukaemia	18 (64.3)
	Malignant lymphoma	6 (21.4)
	Myelodysplastic syndrome	4 (14.3)
Stem cell source	Peripheral blood stem cell	24 (85.7)
	Bone marrow	2 (7.1)
	Cord blood	2 (7.1)
Donor	HLA-matched/related	1 (3.6)
	HLA-matched/unrelated	1 (3.6)
	HLA-mismatched/related	24 (85.7)
	HLA-mismatched/unrelated	2 (7.1)
Conditioning	Myeloablative	3 (10.7)
	Reduced intensity	25 (89.3)

3. Measurement

We evaluated the watts, heart rate, and **Borg scale** at the end of the exercise tolerance test, before and after HSCT.

We asked the patients and recorded their responses on the Borg scale, and also evaluated HR every minute during the exercise tolerance test.

Rating	Descriptor
0	Rest
1	Very, very easy
2	Easy
3	Moderate
4	Somewhat hard
5	Hard
6	-
7	Very hard
8	-
9	-
10	Maximal

Borg Category Ratio (Borg CR-10)

Results

Results 1. Watts, HR, and Borg scale at the end of the exercise tolerance test, before and after HSCT.

Results 2. Relationships between Borg scale and heart rate, and watts during exercise tolerance test before and after HSCT.

Conclusions

- A correlation was found between Borg scale with intensity of exercise tolerance in patients who had undergone allo-HSCT
- Borg scale could be useful to determine the intensity of physical exercise in patients who have undergone allo-HSCT.