



## Introduction

- As with other cancer patients, active physical activity is one of the most important factors for the physical and mental recovery of hemato-oncologic patients.
- However, they are often accompanied by pancytopenia and immunosuppression, and various side effects of chemotherapy. Those situations hinder active participation in physical activity or exercise programs. Also, close monitoring by medical staff is necessary. Especially, due to the risk of infection, rehabilitation with other disease patients was often a concern.
- For those reasons, we started to operate the rehabilitation center in the hemato-oncology inpatient until in 2019. And, in this study, we'd like to present 7 cases of patients who have successfully participated in that inpatient cancer rehabilitation program.

## Methods

### Subjects

- Seven patients who underwent chemotherapy for hematologic cancer were recruited
- Patients were hospitalized for their chemotherapy at 3-week intervals, and rehabilitation programs were provided each time. Also, on the day of admission, the physical and functional status were assessed.

### Interventions

- The exercise program was performed in the physiotherapy room of the inpatient hemato-oncology unit
- Patients were provided a tailored and supervised exercise program with aerobic, stretching, and strengthening exercises for 1 hour. And also the physiotherapist set the goal for home exercise.
  - ✓ Aerobic exercise: Bicycle
  - ✓ Strengthening exercise: Theraband®, dumbbells
  - ✓ Stretching exercise

### Assessment

- Bioimpedance analysis: Weight, BMI, SMM, Percent body fat
- Functional assessment: Handgrip strength, FAC, BBS
- Pain: VAS

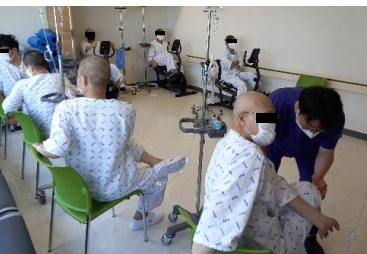


Figure 1. Supervised and group physical therapy



Figure 2. Booklet for home exercise

## Results

Table 1. Clinical characteristics of subjects

variables	N = 7
Age, years	64.57±11.13
Male: Female	5:2
Height, cm	164.97±7.82
Weight at baseline, kg	57.40±7.08
Cancer type	
Diffuse large B-cell lymphoma	5
Peripheral T-cell lymphoma	1
Hairy-cell leukemia	1
Chemotherapy	
R-CHOP	5
CHOP	1
Cladribine	1

Values are mean ± standard deviation

Table 2. Comparison of physical status and function

	Baseline	Follow-up	p-value
Weight, kg	57.40 ± 7.49	59.89 ± 7.08	0.028*
BMI, Kg/m <sup>2</sup>	21.11 ± 2.76	22.03 ± 2.53	0.028*
Skeletal muscle mass, kg	24.33 ± 4.61	24.60 ± 4.37	0.553
Percent body fat, %	20.31 ± 11.41	23.76 ± 7.75	0.176
Hand grip strength			
Right	26.63 ± 8.16	28.30 ± 10.02	0.225
Left	24.43 ± 10.2	28.00 ± 7.08	0.398
Functional ambulatory category	3.57 ± 1.51	4.43 ± 0.79	0.102
Berg balance scale	47.57 ± 11.71	55.14 ± 2.27	0.042*
Pain visual analogue scale	1.14 ± 0.90	1.86 ± 0.38	0.102

Values are mean ± standard deviation  
\* p<0.05 is statistically significant.

- After completion of the rehabilitation program, the result showed improvement in Berg balance score (47.57±11.71 vs 55.14±2.27).
- And, despite repeated chemotherapy, their grip strength (26.63±8.16 vs 28.3±7.26), muscle mass (24.33±4.61 vs 24.60±4.37), pain, and gait function were also well-kept. However, a slight increase in body weight and body fat was observed.

## Conclusions

In conclusion, cancer rehabilitation in the hemato-oncology inpatient unit is expected to be helpful for hematological cancer patients to steadily recover and keep their physical strength during the physically demanding chemotherapy.