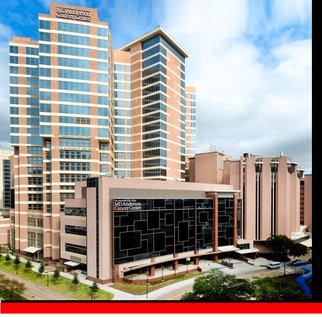

ASSOCIATION BETWEEN PHYSICAL FUNCTION AND CLINICAL OUTCOMES IN OLDER ADULTS EVALUATED FOR HEMATOPOIETIC STEM CELL TRANSPLANTATION

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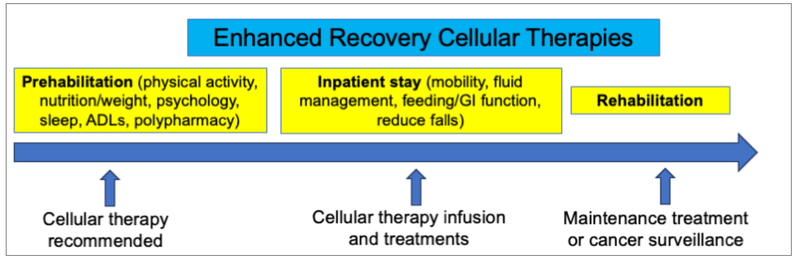
INTRODUCTION

Multi-disciplinary supportive care programs including physical prehabilitation (prehab), nutrition, medication, and psychological optimization prior to hematopoietic stem cell transplantation (HSCT) have been recognized as important interventions to improve outcomes in these medically-complex patients, especially in older adults susceptible to functional decline. We have shown in a cohort of 132 older adults (average age 69) that prehab significantly improves physical function *prior* to HSCT (improved 6-min walk, 5-times sit-to-stand, Timed up and Go, gait speed, and handgrip). It is important to know if these functional tests are associated with clinical outcomes. The goal of this study is to evaluate baseline physical function in adults being evaluated for allogeneic HSCT, and for those who undergo HSCT, determine the association between function and clinical outcomes.

METHODS

Retrospective study of 327 consecutive patients referred for comprehensive prehabilitation prior to allogeneic HSCT. These patients were seen in a multidisciplinary supportive care program, Enhanced Recovery Cellular Therapies (ER-CT), which included physical medicine and rehabilitation, physical and occupational therapy, clinical pharmacist, dietitian, and SCT medical outpatient visits prior to possible HSCT. Functional and symptom measures (Table 1) were obtained on all patients at baseline. Clinicodemographic data and clinical outcome data (inpatient length of stay, time to engraftment, grade 3-5 toxicities, ICU stay, readmission, need for inpatient rehabilitation, relapse, overall survival, non-relapse mortality) were measured in all HSCT recipients.



RESULTS (Table 1)

Measure, median (IQR)	Yes HSCT, n=261	No HSCT, n=66	P-value
6-minute walk test	456 (399, 510)	396 (267, 450)	**<0.001**
5-times sit-to-stand	9.9 (8.3, 12.6)	11.4 (9.5, 14.3)	**0.021**
Timed up and Go	6.6 (5.8, 7.6)	7.5 (6.6, 9.2)	**<0.001**
Dynamic gait index	23 (23, 24)	23 (21, 24)	**<0.001**
10 meter walk test	1.8 (1.5, 2.0)	1.5 (1.2, 1.9)	**<0.001**
Handgrip dynamometry	65 (50,80)	55 (40, 75)	**0.015**
AMPAC Basic Mobility	30 (20, 38)	35 (25, 45)	**0.013**
ESAS Physical Symptoms	6 (2, 13)	9 (4, 17)	**0.035**
ESAS Psychological Symptoms	0 (0, 2)	0 (0,2)	0.3
ESAS Symptom Burden total	8 (3, 18)	12 (5, 21)	0.083

Bolded values indicate significant values.
Abbreviations: AMPAC, Activity Measure for Post Acute Care; ESAS, Edmonton Symptom Assessment System.

RESULTS

Of the 327 patients, 261 (80%) underwent allogeneic HSCT. The mean (SD) age at prehab was 70 (3) years old. 39% were female. The most common cancer diagnoses were acute leukemia (42%), myelodysplastic syndrome (31%), and myeloproliferative disorder (21%). Reasons for no HSCT included: patient preference, disease progression, and medical complications. Baseline physical function was significantly superior, and physical symptoms were lower in patients who ended up receiving HSCT (P<0.05) (Table 1).

Of the 261 patients who received HSCT, in univariate analyses, baseline gait speed and dynamic gait index were significant predictors of overall survival (HR: -0.51, 95% CI: -1.0, -0.01, P=0.047) and (HR: -0.06, 95% CI: -0.12, -0.01, P=0.03), respectively.

Patients who were admitted to the ICU had slower 5-times sit-to-stand (11.7 vs. 9.8, P=0.01). Patients who were admitted to inpatient rehabilitation had a slower Timed Up and Go test (7.1 vs. 6.5, P=0.03), slower 5-times sit-to-stand (12.3 vs 9.8, P=0.04), and lower Dynamic gait index (23 vs. 24, P=0.02).

CONCLUSIONS

Physical symptoms and function were superior in patients who underwent HSCT (versus those who did not). Physical function measures such as gait speed and dynamic gait index were associated with overall survival and 5-times sit-to-stand was slower for patients who needed an ICU stay. In addition to demonstrating functional improvement prior to cell therapy, physical function tests could be used to predict risk in older adults being evaluated for allogeneic HSCT.

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