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POSTER ABSTRACTS

903.HEALTH SERVICES AND QUALITY IMPROVEMENT -MYELOID MALIGNANCIES

The Frailty Syndrome As Predictor of Allogeneic Hematopoietic Cell Transplantation Outcomes. Prospective Study on Behalf of the Grupo Español De Trasplante Hematopoyético y Terapia Celular

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INTRODUCTION

Including frailty in the evaluation of patients before HCT is recommended, but more needs to be done to reach a consensus on how to evaluate and manage this syndrome in clinical practice.

Since 2021, sixteen institutions members of the Grupo Español de Trasplante Hematopoyético y Terapia Celular (GETH-TC) have participated in a multicenter and prospective study with the purpose of investigating the state of frailty of adult patient candidates to HCT and evaluate the effect of frailty in transplant outcomes.

METHODS

All Spanish institutions members of the Group were invited to participate in the study and finally 16 of them were actively involved in it. All patient candidates for HCT were eligible to be included in the study after providing informed consent. Frailty was evaluated at first consultation, at admission, and after the stem cell infusion, using the HCT Frailty Scale (Salas et al. BMT 2023) as described in **Table 1**. According to their respective total frailty score, patients were classified into three levels of frailty: fit, pre-frail, and frail. The frailty assessment was made by the hematologists and nurse team as part of the clinical practice, utilizing existing human resources and without requiring additional medical appointments for patients. The median time to complete the evaluation ranged from 8 to 10 minutes. The evaluation of physical frailty was complemented with the Mini-Cog test. The results obtained from the frailty assessment were not used to determine HCT eligibility and/or to design the HCT process. This study did not have external funding.

RESULTS

Between February 2021 and May 2023, 916 consecutive adult candidates for HCT in any of the participating institutions were included in the project. Of all of them, the results reported here correspond only to the 341 adult candidates for allogeneic (allo)-HCT. Median patients' age was 56 (range, 18-76); 65.3% were males; the most prevalent baseline diagnosis was myeloid malignancies (57.5%). Prior to HCT, 36.8% adults had an KPS<90% and 11.5% an HCT-CI>3, 53.1% patients received reduced intensity conditioning regimens, 25.5% alternative donor grafts, and 61.6% received PTCY-based prophylaxis.

At the first consultation, 94 (27.6%) adults were classified as fit, 203 (59.5%) as pre-frail, and 44 (12.9%) as frail. Frail patients were more likely to have a KPS<90% (OR 2.80, p<0.01) and an abnormal result of the Mini-Cog test (<3) (OR 8.21, P<0.001). The probability of being frail was independent of age (continuous) (p=0.654), sex (p=0.323), and comorbidities (HCT-CI>3) (p=0.196) (multivariate binary regression analysis).

As shown in **Table 1**, the state of frailty changed throughout the study period, confirming the dynamic nature of the frailty syndrome. A total of 59 (17.3%) patients went through a pre-transplant rehabilitation (pre-hab) program. With this information, the dynamics of frailty of these patients was compared with that of patients who did not join a pre-hab program. At HCT admission, the distribution of patients across the frailty categories was different between the two groups (p=0.028). The proportion of fit patients was higher in the pre-hab group (55.1% vs. 26.7%) because part of the pre-frail patients changed to the fit category.

The power of the HCT Frailty Scale to predict OS was evaluated in the subsample of 216 patients that had a minimum follow-up of 120 days among survivors. **Table 1** shows that the probability of OS at 1-year increases with the level of fitness of the patients at first consultation, as follows: 35.6% (frail), 70.5% (pre-frail) and 72% (fit), (p<0.001). Secondly, the effect of the level of fitness in the probability of 1-year OS was higher with frailty measured at the time of HCT admission; respectively, 20%, 66.8% and 78.9%. (p<0.001) (**Figure 1**). The difference is explained by the improvement in fitness of the patients that participated in a pre-hab program between first consultation and admission.

CONCLUSIONS

This study validates the applicability of the HCT Frailty Scale at HCT institutions that are part of a health care system different from that where it was first implemented. The HCT Frailty Scale classifies adult patients to allo-HCT in three categories of frailty, frail that have predictive power over transplant outcomes. Frailty syndrome is independent of age and comorbidities and can be improved through pre-hab programs with the positive result of improving the OS of transplanted patients.

Disclosures Fox: *GSK:* Consultancy; *Abbvie:* Consultancy, Other: Support for attending meetings and/or travel; *Sierra Oncology:* Consultancy; *Novartis:* Consultancy, Honoraria; *BMS:* Honoraria. **Lavilla:** *Sanofi, Janssen, Incyte, SOBI; Belgene:* Consultancy, Honoraria. **Sureda Balari:** *MSD:* Research Funding; *Kite:* Consultancy, Speakers Bureau; *Takeda:* Consultancy, Honoraria, Speakers Bureau.

TABLE 1. HCT Frailty Scale				
Variables included	**Abnormal result**	**If normal result**	**If abnormal result**	
Clinical Frailty Scale	≥ 3	+0	+1.5	
IADL Test	≥1 Limitation	+0	+1	
TUGT	>10 seconds	+0	+1.5	
Grip Strength	<16 kg female/<26 kg male.	+0	+1	
Self-Rated Health Question	Fair, Poor	+0	+1	
Fall in Last 6 Months	Yes	+0	+1	
Albumin Serum Level	<38 g/L	+0	+1.5	
C-Reactive Protein: Abnormal	≥11 mg/L	+0	+2	
Median of time: 8-10 minutes Performed by Medical Doctors and Specialized Nurses		HCT Frailty Score: Sum of the scores obtained from the assessment of each variable included in the scale		
Patient Frailty Status Classification:		Fit (score = 0-1) Pre-Frail (score = 1.5-5.0) Frail (score = 5.5-10.5)		
Main Results (all patients)				
All patients included in the study:	**First Consultation N=341**	**HCT Admission N=341**	**Day +100 N=213**	**6 months N=126**
HCT FRAILTY SCALE				
Fit (score = 0-1)	94 (27.6)	101 (29.6)	53 (25.0)	28 (22.1)
Pre-Frail (score = 1.5-5.0)	203 (59.5)	215 (63.0)	118 (55.7)	72 (57.1)
Frail (score = 5.5-10.5)	44 (12.9)	25 (7.3)	41 (19.3)	26 (20.6)
Missing / Not measured yet	0	0	128	215
MiniCog<3	27 (7.9)	17 (5.1)	12 (3.5)	1 (0.2)
Results according to the PRE-habilitation				
No PRE-habilitation	**First Consultation N=281**	**HCT Admission N=281**	**Day +100 N=176**	**6 months N=99**
HCT FRAILTY SCALE				
Fit (score = 0-1)	82 (29.2)	75 (26.7)	46 (26.1)	23 (23.2)
Pre-Frail (score = 1.5-5.0)	163 (58.0)	185 (65.8)	94 (53.4)	57 (57.6)
Frail (score = 5.5-10.5)	36 (12.8)	21 (7.5)	36 (20.5)	19 (19.2)
Missing / Not measured yet	0	0	105	182
MiniCog<3	21 (7.5)	15 (5.3)	9 (3.2)	1 (0.4)
PRE-habilitation	**N=59**	**N=69**	**N=36**	**N=26**
HCT FRAILTY SCALE				
Fit (score = 0-1)	12 (20.3)	26 (44.1)	7 (19.4)	5 (19.2)
Pre-Frail (score = 1.5-5.0)	39 (66.1)	29 (49.2)	24 (66.7)	14 (53.8
Frail (score = 5.5-10.5)	8 (13.6)	4 (6.8)	5 (13.9)	7 (26.9)
Missing / Not measured yet	0	0	36	33
MiniCog<3	6 (10.2)	1 (1.7)	3 (5.1)	0
P value*	0.379	**0.028**	0.342	0.674
Impact of fit, pre-frail and frail stages in OS				
N=216	**1-year OS (95% CI)**	**1-year OS (95% CI)**	**1-year OS (95% CI)**	
Fit	72 (55.8-83.1)	78.9 (64.6-87.9)	72 (55.8-83.1)	
Pre-Frail	70.5 (59.7-78.9)	66.8 (55.3-76.0)	70.5 (59.8-78.9)	N/A
Frail	35.6 (14.2-57.9)	20.0 (3.6-45.9)	45.6 (14-2.57.9)	
P value**	<0.001	<0.001	<0.001	
ROC test	58.2%	68.4%		

*P value of the X2 test of equal distribution of frailty in the non-pre and pre-habilitation groups in the respective time points.

**Log-Rank Test.

Figure 1 HCT Frailty Scale and Overall Survival

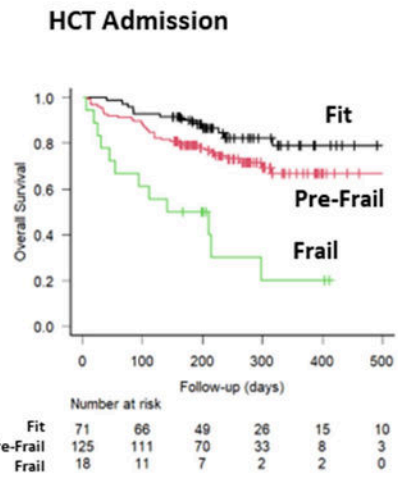

Figure 1

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