

## Abstract

**INTRODUCTION:** Nutritional support is pivotal in patients with hematopoietic cell transplantation (HCT). Optimal nutritional status has been associated with a shorter time of engraftment and lower infection rates.

**OBJECTIVE**: To evaluate the association between nutritional parameters and outcomes such as overall survival and specific complications, in patients who underwent HCT.

PATIENTS AND METHODS: Retrospective study between 2011 and 2014. We assessed nutritional status before transplantation and then 10 days after it including anthropometry, body mass index (BMI), albumin, prealbumin, total urinary nitrogen (TUN) and type of nutritional support

**RESULTS**: We analyzed 50 patients with a median follow-up time of 35 months. Median age was 41 years (18-67), 33 (66%) were men, 32 (64%) allogeneic HCT and 18 (36%) autologous HCT. Diagnoses included acute leukemia/myelodisplasic syndrome (27), lymphoma (7), multiple myeloma (13), and aplastic anemia (3). 37 patients developed mucositis and 23 of them required TPN (mild: 2, moderate: 20, severe: 1). Incidence of mucositis comparing allogeneic and autologous HCT that required TPN was similar (75% vs 72%). We found differences between BMI, albumin and prealbumin levels before and 10 days after HSCT (p< 0,05) Multivariate analysis showed an association between lower albumin levels after HCT and TPN requirement, as well as a longer length of stay. High TUN and lower albumin level after HCT were associated with longer platelet engraftment time (p<0,05). Nine patients (28%) in the allogeneic group developed acute gastrointestinal graft versus host disease (GVHD) that required TPN. None of all the evaluated nutritional parameters were associated with overall survive (OS)

CONCLUSIONS: After HCT, high catabolism was associated with longer length of stay, requirement of TPN and platelet engraftment time. Acute gastrointestinal GVHD was associated with more requirement of TPN. Nutritional parameters were not associated with risk of infection and OS.

## Background

Nutritional support is pivotal in patients with hematopoietic cell transplantation (HCT).

Optimal nutritional status has been associated with a shorter time of engraftment and lower infection rates

Many factors induce changes in the metabolism during HCT (i.e. conditioning with high dose of chemoterapy and total body irradiation). Furthermore in allogenic HCT, nutritional support has been suggested as a contributing factor to improving engraftment time and lowering risk of infection during the neutropenic stage

We present the analysis of patients who underwent HCT and the impact of pre and post-transplant biochemical and anthropometric evaluation in multiple clinical outcomes.

## Methods

**Retrospective study** in patients who underwent HCT in 2011-2014.

Pre-transplant assessment included: body mass index (BMI), anthropometry, albumin, pre-albumin and total urinary nitrogen (TUN).

**Post-transplant assessment included**: BMI, albumin, TUN and type of nutritional support

Statistical analysis was performed with SPSS software. We used t student and x<sup>2</sup> to compare variables. Multivariate analysis was made with Spearman coefficient. To estimate overall survival we used Cox Proportional Hazards test

# NUTRITIONAL ASSESMENT AS PREDICTOR OF COMPLICATIONS AFTER HEMATOPOIETIC CELL TRANSPLANTATION Marcela Espinoza<sup>1</sup>, Roberto Olmos<sup>2</sup>, Javiera Perelli<sup>2</sup>, Julieta Klaassen<sup>2</sup>, Pablo Ramírez<sup>1</sup> Departments of Hematology Oncology<sup>1</sup> and Diabetes and Nutrition<sup>2</sup>, School of Medicine, Pontifical Catholic University of Chile

## Results

TABLE	1.	Patient	charac	cteristics

Characteristics	n	%		
Say	••	70		
Sex				
Male	33	66		
Female	17	33		
Median Age (years)	41			
Range	17-67			
Diagnosis				
Acute Leukemia	26	52		
Myelodysplastic Syndrome	1	2		
Lymphoma	7	14		
Myeloma	13	26		
Aplastic Anemia	3	6		
Average length of stay (days)	3	2		
Range	19-1	109		
Type of Transplant				
Autologous	18	36		
Allogeneic	32	64		
Related	20		63	
Unrelated	9		28	
Cord	3		9	
Conditioning				
MA	37	74		
RI	13	26		

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#### Table 2. Nutritional assessment pre and post HCT according to the type of transplantation

Parameter	Pre SCT	Day +10	p value	
	Allogenic			
BMI (kg/m²)	26,6	25,8	0,13	
DNM (%85)	76,1	74,5	0,85	
bumin (mg/dL)	4,1	3,25	p< 0,05	
albumin (mg/dL)	25,6	15,7	p< 0,05	
TUN gr/24 hr	18,9	21,5	0,3	
Tg (mg/dL)	172,5	255,5	p< 0,05	
	Autologous			
BMI (kg/m²)	27,3	26,3	p< 0,05	
DNM (%85)	89,7	69	0,6	
bumin (mg/dL)	4,16	3,4	p< 0,05	
albumin (mg/dL)	25,2	20,5	0,2	
TUN gr/24 hr	17,2	23,9	0,051	
Tg (mg/dL)	-	122	-	

#### Table 3. Multivariate Analysis investigating potential influencing factors associated with HCT complications: significance values

Factor	aGVHD	Lenght of stay	Infectious complications	Neutrophil engraftment	Platelet engraftment	OS
BMI pre	0,444	0,277	0,326	0,25	0,249	0,09
Albumin post	0,738	0,463	0,871	0,36	0,322	0,689
Prealbmin pre	0,765	0,199	0,639	0,128	0,054	0,819
TUN pre	0,625	0,052	0,786	0,397	0,171	0,613
BMI post	0,057	0,149	0,076	0,342	0,303	0,863
Albumin post	0,152	0,012	0,182	0,271	0,015	0,822
Prealbmin post	0,507	0,062	0,018	0,167	0,065	0,391
TUN post	0,945	0,13	0,114	0,087	0,026	0,932
Days of TPN	0,834	0,001	0,137	0,002	0,001	0,791
Requirement of TPN	0,003	0,031	0,123	0,556	0,135	0,769

#### Figure 4. Distribution of mucositis according to the grade and type of HCT. Shown p value corresponds to the comparison between allogeneic and autologous HCT in moderate grade mucositis



#### Figure 5. Distribution of type of nutritional support during HCT. Shown p value corresponds to the comparison of TPN in autologous vs allogeneic HCT



- 1. Significant changes in nutritional parameters were seen after allogeneic and autologous HCT
- 2. Multivariate analysis showed a significant interaction between nutritional parameters and important clinical parameters
- 3. None of the evaluated parameters were associated with decreased overall survival
- 4. Our findings suggest that easy to measure nutritional parameters help predict some outcomes after HCT
- 5. Measurement and correction of nutritional parameters could impact these important outcomes

## Conclusions

# References

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