

ASSOCIATION BETWEEN NUTRITIONAL MARKERS AND MORTALITY IN ELDERLY ON HEMODIALYSIS.



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Introduction and Aim

- The diagnosis of protein energy wasting (PEW) in elderly on dialysis relies on the same nutritional markers and thresholds applied for general adults.
- The definition of the method and cutoffs to screen for PEW is usually set according to its association with poor outcomes.
- Therefore, we **aimed** to investigate whether the nutritional markers and respective thresholds usually applied to screen for PEW in adult HD patients are associated with mortality in a group of elderly patients on HD.

Methods

- Observational, longitudinal and prospective study.
- 173 elderly (≥ 60 years) on maintenance HD patients (> 3 months), 112 (65%) men, mean age of 71 ± 7 years, 66 with diabetes (38%) on HD for 3 years (1.2 to 5.7; median and interquartile ranges).
- Patients were followed for 23 months (12 to 34.4 months) for mortality events.
- Data were evaluated as for each unit increased, as well as per the thresholds established for the diagnosis of PEW in HD patients. The markers and cutoffs investigated for the assessment of PEW were:

- (1) 7-point subjective global assessment (SGA) ≤ 5 points;
- (2) Malnutrition inflammation score (MIS) ≥ 8 points;
- (3) Calf circumference < 31 cm;
- (4) Handgrip strength (HGS) < 20 kg for women and < 30 kg for men.

- Differences between survival curves were assessed by log-rank test. The association between the nutritional parameters and mortality for all causes was evaluated by Cox proportional hazards models (hazard ratio (HR) and 95% confidence interval (CI)), adjusted for gender, presence of diabetes, age and HD length.

Results

- During the follow-up period 112 patients survived and 61 died.

Conclusion

The nutritional markers and the respective cutoffs tested to assess PEW in elderly on HD were associated with higher mortality rates. Thus, these data suggest that these thresholds can be applied to properly evaluate the nutritional status of elderly on HD.

Table 1. Comparison of clinical, demographic and nutritional characteristics between survival and non-survival groups of elderly on chronic hemodialysis (n = 173)

	Survival (n= 112)	Non survival (n=61)	p* value
Age (years)	69.5 \pm 6.7	72.4 \pm 7.7	0.01
HD length (years)	2.8 (1.1; 5.3)	3.0 (1.4; 6.0)	0.34
Men; n (%)	73 (65.2)	39 (63.9)	0.87
Presence of DM; n (%)	44 (39.3)	22 (36.1)	0.74
Urea Kt/V	1.4 \pm 0.3	1.6 \pm 0.5	0.01
Creatinine (mg/dL)	8.6 \pm 2.9	8.8 \pm 2.4	0.75
Subjective global assessment (SGA)	5.4 \pm 0.9	4.9 \pm 0.9	0.01
Malnutrition inflammation score (MIS)	7.3 \pm 3.2	8.9 \pm 3.2	0.01
Calf circumference (cm)			
Men	34.9 \pm 3.7	33.6 \pm 3.9	0.11
Women	33.8 \pm 3.2	32.7 \pm 3.8	0.27
HGS (kg)			
Men	29.5 \pm 7.2	24.7 \pm 7.8	0.01
Women	18.8 \pm 6.6	17.2 \pm 6.9	0.39
HGS adequacy (%)	91.4 \pm 25.3	80.0 \pm 28.5	0.01

* Independent T test or Mann-Whitney U

- The comparison between the survival curves performed by Log-rank test showed that when the thresholds were used to diagnose PEW and low strength, the mortality rates were higher for the SGA ≤ 5 ($p=0.002$), MIS ≥ 8 ($p=0.003$), calf circumference < 31 cm ($p<0.001$) and HGS < 20 kg for women and < 30 kg for men ($p = 0.015$).
- The association between the nutritional markers and all-cause mortality, adjusted for known confounders, is shown on **Table 2**.

Table 2. Association between nutritional markers and all-cause mortality in elderly on Hemodialysis

	HR (CI 95%)*	p value†
SGA		
Per each unit increase	0.62 (0.47; 0.82)	0.01
≤ 5 points	2.37 (1.30; 4.34)	0.01
MIS		
Per each unit increase	1.16 (1.06; 1.26)	0.01
≥ 8 points	2.09 (1.20; 3.64)	0.01
Calf circumference		
Per each unit increase	0.92 (0.84; 0.99)	0.04
< 31 cm	2.37 (1.32; 4.26)	0.01
HGS		
Per each unit increase	0.98 (0.94; 1.01)	0.28
< 30 kg for men	1.98 (1.12; 3.48)	0.02
< 20 kg for women		

*Adjusted for dialysis length, diabetes, age; † Cox proportional hazard

FUNDING: FAPERJ (Brazil), grant number E-26/111.653/2010 and E-26/103.209/2011

668--SP

Dialysis - Nutrition & Inflammation

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DOI: 10.3252/pso.eu.54ERA.2017

ePosters supported by F. Hoffmann- La Roche Ltd.



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