

# MALNUTRITION INFLAMMATION SCORE PREDICTS MORTALITY IN MAINTENANCE HEMODIALYSIS PATIENTS

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## 1. INTRODUCTION

Malnutrition is a strong predictor of mortality in hemodialysis patients, mainly when it is associated with inflammation. Malnutrition Inflammation Score (MIS) is a scoring method for the diagnosis of malnutrition.

## 2. OBJECTIVE

To assess if MIS is associated with mortality in hemodialysis patients and which is the cutoff that can predict it.

## 3. MATERIALS AND METHODS

- Prevalent hemodialysis patients between July 2012 and August 2014
- Demographic characteristics, clinical data and laboratory measurements (serum urea, creatinine, albumin, CRP)
- Nutritional assessment:** BMI, tricipital skinfold thickness (TST), mid arm muscle circumference (MAMC), Malnutrition Inflammation Score (MIS) (0-30)
- Patients were followed until October 2014
- Censure:** switch off dialysis, renal transplantation, transference to another facility, or death.
- Statistical analysis (SAS)**
  - Student's t test and Wilcoxon
  - Chi-square
  - ROC curves
  - Kaplan-Meier and log rank test
  - Cox proportional hazard analysis adjusted for demographic, biochemical and anthropometrical variables
  - p<0.05

## 4. RESULTS

### Main characteristics of all patients and according survival

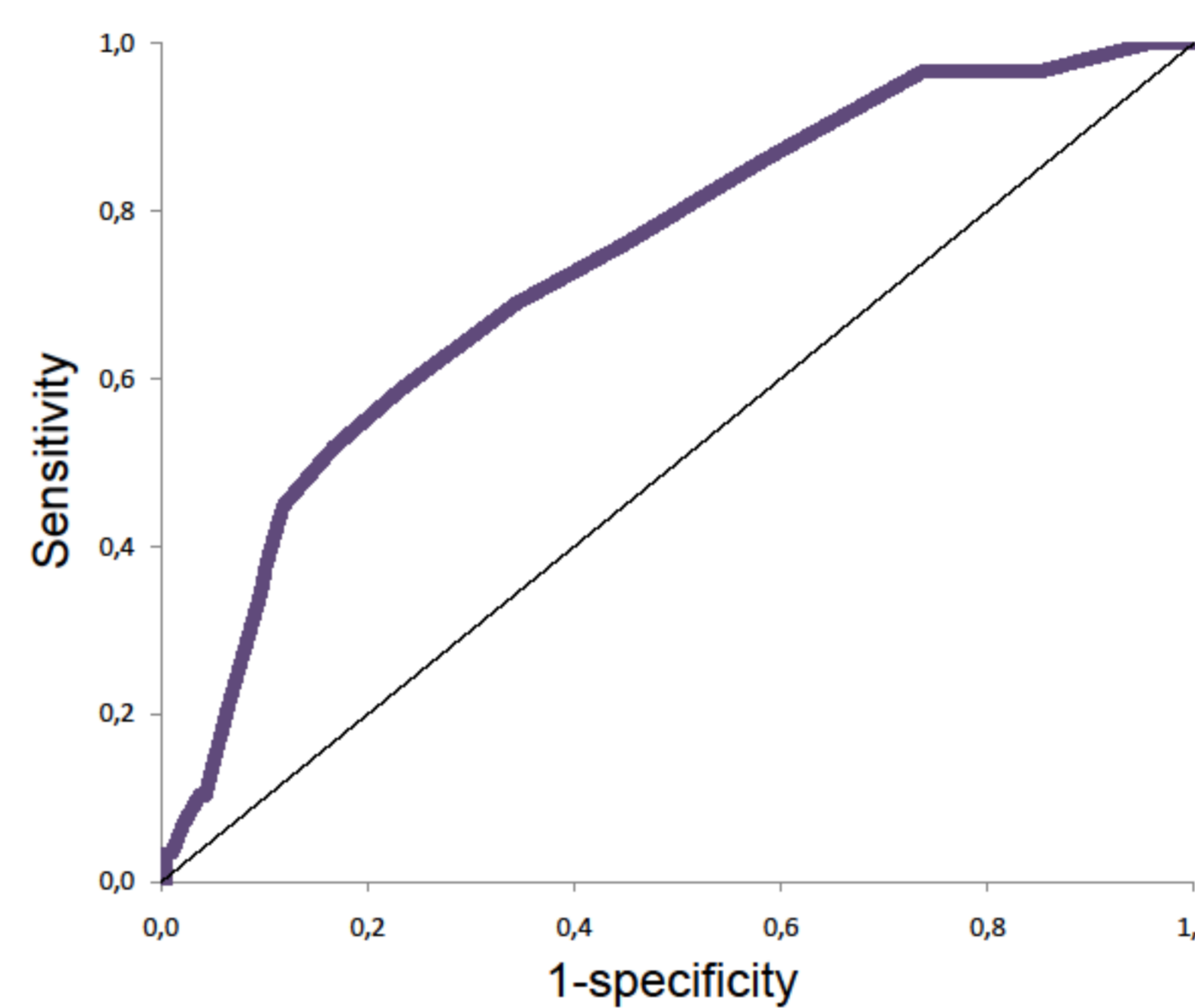
Variables	All (n=215)	Survivals (n=186)	Non-survivals (n=29)
Gender [M(%)]	121 (56.3)	108 (58.1)	13 (44.8)
Age (years)	58.4± 14.6	58 ± 14.3	61.8 ± 15.3
Dialysis vintage (months)	16.6 (6.8, 40.8)	15.6 (6.8, 38.3)	29.3 (11.8, 80.3) *
Diabetes (%)	95 (44.4)	79 (42.5)	16 (57.1)
Time of follow up (months)	13.6 ± 7.8	14.3 ± 7.7	8.7 ± 6.2 *
MIS	5 (4,8)	5 (3, 7)	9 (5.5, 12)*
BMI (kg/m <sup>2</sup> )	26 ± 6	25.9 ± 5.6	26.7 ± 8.3
%TST	107 ± 60.9	107.9 ± 62.4	100.9 ± 50.7
%MAMC	99.4 ± 17	99.5 ± 16.5	98.7 ± 20.6
Serum Urea (mg/dl)	106.4 ± 33.7	107.9 ± 34	96.2 ± 31.2
Serum Creatinin (mg/dl)	8.7 ± 2.9	8.8 ± 2.9	7.6 ± 2.6
Albumin (g/dl)	3.8 ± 0.6	3.9 ± 0.6	3.6 ± 0.4 *
CRP (mg/dl)	1 (0.5, 1.9)	0.9 (0.5, 1.8)	1.5(0.7, 2)

\*p<0.05 comparing group survivals vs. non survivals

#### Follow-up :

- 29 deaths (13.5%)
- 19 received kidney transplants (8.8%)
- 3 patients transferred to another facility (1.4%)

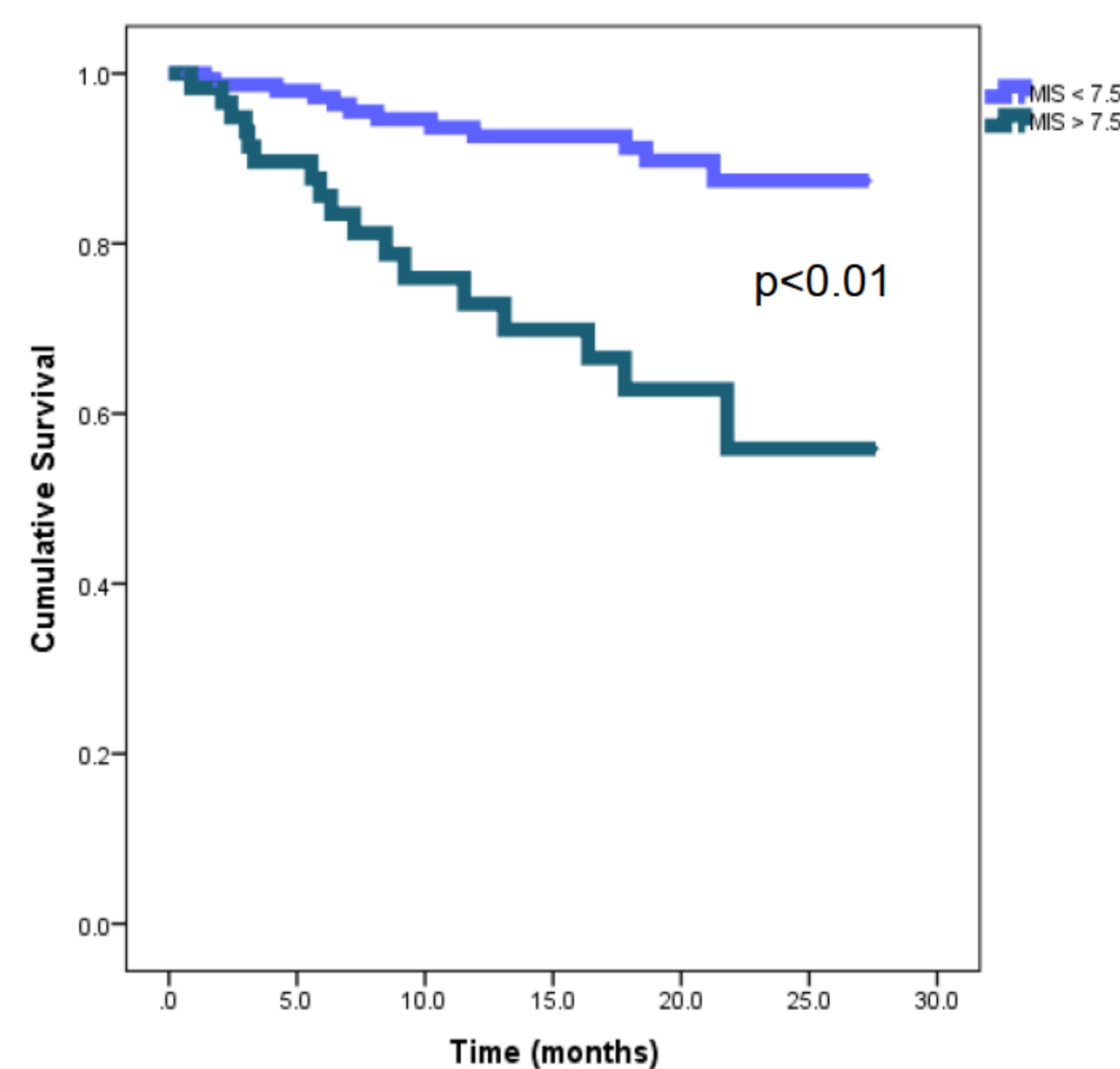
### ROC curve



Area under the curve	CI (95%)	p
0.737	0.642-0.832	<0.01

Cutoff	Sensitivity	Specificity
7.5	58.6%	76.9%

### Kaplan-Meier



### Cox proportional hazard analysis

	HR (95% CI)	p
MIS	1.15 (1.08-1.226)	<0,001

	HR (95% CI)	p
MIS	1.17 (1.07-1.28)	0.01
Age	0.99(0.97-1.02)	0.75
Gender	0.88 (0.41-1.91)	0.75
Dialysis vintage	1.0 (1.0-1.01)	0.3
Diabetes	0.57 (0.35-1.78)	0.57
Serum creatinine	0.86 (0.72-1.03)	0.11
Serum albumin	0.86 (0.44-1.7)	0.67
BMI	1.06 (1.0-1.01)	0.56

## 5. CONCLUSION

The cutoff of MIS that predicts mortality was 7.5. This cutoff was useful to predict mortality in prevalent hemodialysis patients in univariate analysis. MIS was an independent predictor of mortality.

