Nutritional risk index is an independent predictor of one-year mortality after primary angioplasty for ST-segment elevation myocardial infarction, regardless of age, frailty and clinical severity

R. Arroyo-Espliguero[1], A. Silva-Obregon[2], M.C. Viana-Llamas[1], A. Estrella-Alonso[2], S. Saboya-Sanchez[3], C. Marian-Crespo[2], N.G. Arriero-Fernandez[2], Z. Eguileor-Marin[2], M.A. Tirado-Fernandez[2], V. Ruiz De Santaquiteria-Torres[2], A. Castillo-Sandoval[1], C. Toran-Martinez[1], G. Uribe-Heredia[1], B. Garcia-Magallon[1], A. Perez-Sanchez[1]

[1]University Hospital, Cardiology, Guadalajara, Spain; [2]University Hospital of Guadalajara, Intensive Care Unit., Guadalajara, Spain; [3]University Hospital Puerta de Hierro Majadahonda, Intensive Care Unit, Madrid, Spain

Background: Undernutrition is a common feature of elderly and hospitalized patients with cardiovascular diseases and is associated with adverse events.

Purpose: Assess the impact of nutritional risk index (NRI) in one-year mortality in ST-segment elevation myocardial infarction (STEMI) patients following primary angioplasty (PA).

Methods: Cohort of 319 consecutive patients (64.4 years [54.3–75.2]; 21.9% women) admitted to a general ICU after a PA for STEMI. NRI was calculated as 1.519 × serum albumin (g/L) + 41.7 × (actual body weight [kg]/ideal weight [kg]). Patients were dichotomized in no to mild (NRI ≥97.5) and moderate to severe (NRI <97.5) nutritional risk. We used Kaplan-Meier and Cox survival models.

Results: Patients with NRI <97.5 were older, mainly women, had a higher GRACE 2.0 and required more inotropic agents (P=0.001) and me-

chanical ventilation (P=0.002) during admission. They had lower CK and higher BNP levels, despite the lack of differences in LVEF and MI location (P=0.164) (Table 1). One-year mortality rate was higher in patients with NRI <97.5 (P<0.001), mainly from cardiogenic shock (P<0.001) (Table). After Cox regression analysis, moderate to severe nutritional risk showed a 3.10-fold higher risk of one-year mortality (95% confidence interval [CI], 1.21 to 7.90, P=0.018), independently of age, female gender, frailty (Clinical Frailty Scale ≥4), GRACE 2.0 and LVEF (Figure 1).

Conclusion: Moderate to severe NRI was associated with one-year all-cause mortality in patients undergoing PA for STEMI, regardless of age, female gender, frailty and clinical severity. The prognostic impact of NRI in mortality suggests the need to include its assessment in clinical examination of STEMI patients.

Table 1. Baseline characteristics

	No to mild NRI (≥97.5) (n=193)	Moderate to high NRI (<97.5) (n=126)	P value
Age, years	60 [53–68]	71 [60–81]	<0.001
Female gender, n (%)	31 (16.1)	39 (31)	0.002
CFS ≥4, n (%)	14 (7.3)	30 (23.8)	<0.001
Mortality, n (%)	7 (3.6)	21 (16.7)	<0.001
Hypertension, n (%)	78 (40.4)	75 (59.5)	<0.001
Diabetes mellitus, n (%)	34 (17.6)	46 (36.5)	<0.001
GRACE 2.0	106 [92–132]	136.5 [115.5–171.5]	<0.001
Left ventricle ejection fraction (%)	55 [45–60]	53 [43–60]	0.216
High-sensitivity troponin I (pg/mL)	9968.1 [61.7–68451.5]	371 [43.8–43678.8]	0.114
Creatin-phosphokinase (IU/L)	1904 [872–3675]	1170.5 [372.2–2204.3]	<0.001
B-natriuretic peptide (pg/mL)	85.3 [25.4–201.4]	220.9 [97.7–594.9]	<0.001

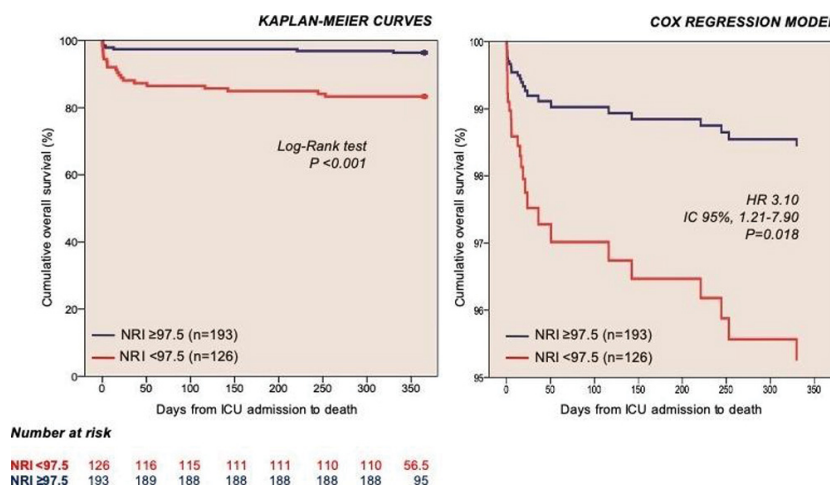CFS: Clinical frailty scale; MI: Myocardial infarction; NRI: Nutritional risk index.

Figure 1. Kaplan-Meier and Cox survival curves