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Frailty is an independent predictor of one-year mortality in patients with ST-segment elevation myocardial infarction, regardless of age, clinical severity and left ventricular function

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Background: Frailty is characterized by decline in physiologic reserve and function leading to increased vulnerability. Sarcopenia, one of its features, has been associated with cardiac dysfunction.

Purpose: Assess frailty-based mortality in ST-segment elevation myocardial infarction (STEMI) patients following primary angioplasty.

Methods: Retrospective cohort of 427 consecutive STEMI patients (64 years [55–75]; 78% men) admitted to a general ICU between November-2013 and February-2017. We assessed frailty with the Clinical Frailty Scale (CFS). We used Kaplan-Meier and Cox regression models for survival analysis, stratified by CFS score categories (Figure). For clinical relevance, patients were dichotomized in robust (CFS 1–3) and vulnerable (CFS ≥4).

Results: Vulnerable patients were older, had more comorbidities and a higher GRACE 2.0. They had lower CK and albumin levels and higher BNP levels, despite the lack of frailty-based differences in LVEF and MI size and location. One-year mortality rate was higher in vulnerable patients (Table). After Cox regression analysis, vulnerable patients (CFS ≥4) showed a 3.37-fold higher risk of one-year mortality than robust ones (95% CI, 1.59–7.15; P=0.002), independently of age, gender, GRACE 2.0 or LVEF.

Conclusions: Frailty is an independent predictor of one-year mortality in STEMI patients, independently of age, clinical severity and ventricular function. Frailty assessment should be routinely included in the clinical examination and decision-making process of STEMI patients.

Baseline characteristics

	Vulnerable (CFS ≥4) (n=60)	Robust (CFS 1–3) (n=367)	P value
One-year mortality, n (%)	15 (25)	14 (4.1)	<0.001
Age (years)	78 [67–85]	61 [54–72]	<0.001
Gender (women), n (%)	28 (46.7)	65 (17.7)	<0.001
Hypertension, n (%)	47 (78.3)	156 (42.5)	<0.001
Diabetes mellitus, n (%)	31 (51.7)	79 (21.5)	<0.001
GRACE 2.0	150 [129–170.8]	112 [93–136]	<0.001
Left ventricular ejection fraction (%)	52 [40–60]	55 [45–60]	0.151
MI location (anterior), n (%)	26 (43.3)	168 (45.8)	0.781
Creatin-phosphokinase (UI/L)	921 [286.8–2072]	1496 [607–2786]	0.011
High-sensitivity troponin I (pg/mL)	3699.5 [38–47968.1]	8789.8 [65.8–61970]	0.537
B-natriuretic peptide (pg/mL)	267.9 [117.3–901.6]	104.3 [29.5–268.7]	<0.001
Albumin (g/L)	34.9 [32.8–37.4]	38.4 [35.7–40.4]	<0.001
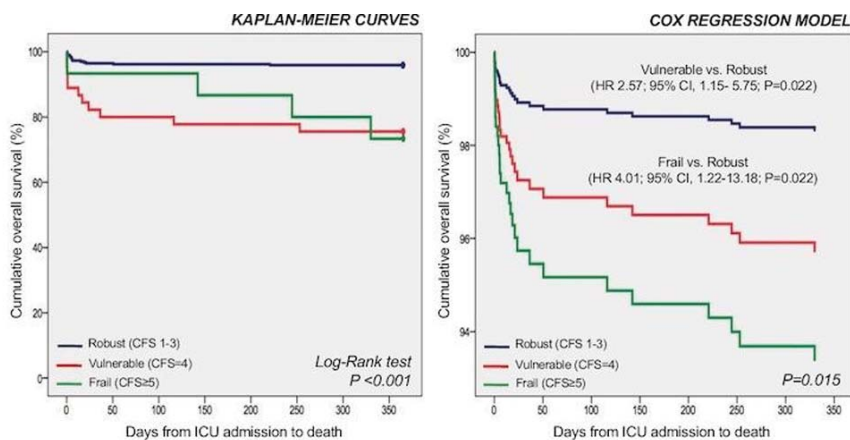
Kaplan-Meier and Cox survival curves.