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Original Study

An Easy Assessment of Frailty at Baseline Independently Predicts Prognosis in Very Elderly Patients With Acute Coronary Syndromes

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A B S T R A C T

Background: Information about the impact of frailty in patients with acute coronary syndromes (ACS) is scarce. No study has assessed the prognostic impact of frailty as measured by the FRAIL scale in very elderly patients with ACS.

Methods: The prospective multicenter *LONGEVO-SCA* registry included unselected patients with ACS aged 80 years or older. A comprehensive geriatric assessment was performed during hospitalization, including frailty assessment by the FRAIL scale. The primary endpoint was mortality at 6 months.

Results: A total of 532 patients were included. Mean age was 84.3 years, 61.7% male. Most patients had positive troponin levels (84%) and high GRACE risk score values (mean 165). A total of 205 patients were classified as prefrail (38.5%) and 145 as frail (27.3%). Frail and prefrail patients had a higher prevalence of comorbidities, lower left ventricle ejection fraction, and higher mean GRACE score value. A total of 63 patients (11.8%) were dead at 6 months. Both prefrailty and frailty were associated with higher 6-month mortality rates ($P < .001$). After adjusting for potential confounders, this association remained significant (hazard ratio [HR] 2.71; 95% confidence interval [CI] 1.09–6.73 for prefrailty and HR 2.99; 95% CI 1.20

The authors declare no conflicts of interest.

Members of the LONGEVO-SCA registry investigators are listed in Appendix 1.

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−7.44 for frailty, $P = .024$). The other independent predictors of mortality were age, Charlson Index, and GRACE risk score.

Conclusions: The FRAIL scale is a simple tool that independently predicts mortality in unselected very elderly patients with ACS. The presence of prefrailty criteria also should be taken into account when performing risk stratification of these patients.

The progressive aging of the population and the high incidence of acute coronary syndromes (ACS) in the elderly is leading to an important increase in the number of elderly patients admitted for ACS.[1,2] The few elderly patients included in clinical trials have significantly different characteristics when compared with the "real-life" elderly population.[3,4] Comorbidities and frailty are common in this clinical setting and are associated with higher rates of complications and consumption of health care resources.[5–7] Information on the impact of aging-related conditions on management and prognosis of elderly patients with ACS is scarce. Several authors have described a significant association between frailty and a worse prognosis in patients with ACS.[8–17] However, these reports used different tools to assess frailty, and some of them included items that are difficult to measure during the first hours after admission for ACS (walk speed, handgrip strength, stand-up test),[10–15,17] when some important decisions regarding clinical management must be taken. The FRAIL scale[18,19] is a brief, interview-based tool that evaluates 5 items (fatigue, resistance, ambulation, concomitant diseases, and weight loss). It is easy to administer and interpret. All these characteristics make this scale a very attractive tool to assess frailty in the acute clinical setting. No study has previously assessed the prognostic role of the FRAIL scale in elderly patients with ACS.

The LONGEVO-SCA registry[20] (*Impacto de la fragiLidad y Otros síNdromes GEriátricos en el manejo y pronóstico Vital del ancianO con Síndrome Coronario Agudo sin elevación de segmento ST*) is a multicenter registry conducted to assess the characteristics of a cohort of unselected elderly patients hospitalized by non−ST segment elevation ACS (NSTEACS), in whom a comprehensive geriatric assessment was performed during admission. The main aim of this study was to analyze the prognostic value of frailty, measured by the FRAIL scale, and 6-month mortality risk in this clinical setting. We also explored the association between frailty and mortality or readmission at 6 months.

Methods

Design and Study Population

This is a prospective, multicenter observational study conducted at 44 Spanish hospitals. This initiative was endorsed by the Geriatric Cardiology Group of the Spanish Society of Cardiology. The design has previously been described in detail.[20] Briefly, the study included all consecutive patients aged 80 years or older admitted for NSTEACS. NSTEACS was defined as the presence of chest pain consistent with ACS and at least 1 of the following: (1) electrocardiographic (ECG) changes suggestive of myocardial ischemia, or (2) elevated markers of myocardial damage. Signed informed consent by the patient or representative in cases of cognitive impairment was required. Patient refusal to participate in the registry and the impossibility of obtaining the geriatric tests were considered exclusion criteria. Patients with severe comorbidities were excluded only if symptoms of myocardial ischemia were clearly triggered only by other conditions such as acute anemia, severe decompensated respiratory insufficiency, active infectious diseases, or severe coexisting valvular disease (type 2 myocardial infarction).

Decisions on antithrombotic treatment and performance of coronary angiography were left to the discretion of the each medical team according to current recommendations. If coronary angiography was performed, vascular access, antithrombotic drugs, and the choice of stents or other devices were left to the operator's decision.

Data Collection

Data were prospectively collected by local investigators during the admission, using standardized case report forms. Demographics, baseline clinical features, ECG data, and ECG, laboratory, and angiographic parameters were collected. The GRACE (Global Registry of Acute Cardiac Events)[21] and CRUSADE (Can Rapid risk stratification of Unstable angina patients Suppress ADverse outcomes with Early implementation of the ACC/AHA [American College of Cardiology/American Heart Association] Guidelines)[22] risk scores were calculated for each patient. In-hospital clinical outcomes also were collected, such as the need of invasive procedures and in-hospital complications (bleeding and its location, need for blood transfusion, need for surgery, infectious complications requiring antibiotics, reinfarction, mechanical and arrhythmic complications, delirium, and hospital mortality).

Baseline Geriatric Assessment

Baseline geriactric assessment was held during admission by trained physicians through interviews with the patient and/or family/caregivers and referring to the patient's status before admission. To avoid selection bias, investigators were encouraged to include all patients during the first 72 hours.

- Previous frailty was assessed by the FRAIL scale.[18,19] This is a simple, interview-based tool that evaluates 5 items (fatigue, resistance, ambulation, concomitant diseases, and weight loss). This scale allows a fast assessment of preadmission frailty status, thus avoiding the interference of frailty-acquired changes during admission. Prefrailty is defined as the presence of 1 or 2 criteria, and frailty as the presence of 3 or more criteria.
- The functional capacity for basic activities of daily living was assessed by the Barthel Index.[23] This is an ordinal scale with a total score of 0 to 100, whereby the intermediate ranges help evaluate the different degrees of dependency: total (0–20), severe (21–40), moderate (41–60), mild (61–90), and independent (>90). Instrumental activities were evaluated with the Lawton-Brody Index.[24]
- Cognitive status was evaluated with the Pfeiffer test.[25]
- Comorbidity was evaluated with the Charlson Index,[26] with a maximum score of 37 points. The number of medications with chronic prescription taken by the patient before admission was also collected.
- The nutritional risk assessment was carried out with the Mini Nutritional Assessment−Short Form (MNA-SF),[27] whose value ranges from 0 to 14 points. Scores below 11 identify patients at risk of malnutrition.