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ORIGINAL ARTICLE

Non-ST-elevation acute coronary syndromes in octogenarians: Applicability of the GRACE and CRUSADE scores☆

Ana Faustino*, Paula Mota, Joana Silva, Em nome dos Investigadores do Registo Nacional de Síndromes Coronárias Agudas da Sociedade Portuguesa de Cardiologia[1]

Serviço de Cardiologia, Centro Hospitalar e Universitário de Coimbra – Hospital Geral, Coimbra, Portugal

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KEYWORDS
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Abstract
Introduction: Assessment of ischemic and bleeding risk is critical for the management of elderly patients with acute coronary syndromes, but it has been little studied.
Objective: This study aims to assess the applicability of the GRACE and CRUSADE scores in patients aged ≥80 years with non-ST-elevation acute coronary syndrome (NSTE-ACS), and to identify the main predictors of in-hospital mortality and major bleeding in this population.
Methods: We analyzed 544 patients aged ≥80 years with NSTE-ACS included in the Portuguese Registry on Acute Coronary Syndromes and identified the predictors of in-hospital mortality and major bleeding during hospitalization. Prediction models were created for these endpoints, then compared with the GRACE and CRUSADE scores, and their applicability to the study population was assessed.
Results: Use of coronary angiography was associated with reduced risk of in-hospital mortality, without increasing risk of major bleeding (OR 0.2, 95% CI 0.006–0.49, p=0.001). Major bleeding was an independent predictor of in-hospital mortality (OR 10.9, 95% CI 2.36–50.74, p=0.002), and was associated with comorbidities and pharmacological therapy during hospitalization. The GRACE score showed good diagnostic accuracy for in-hospital mortality (AUC 0.75, 95% CI 0.63–0.87, p<0.001), but the CRUSADE score had weak discriminatory capacity for major bleeding (AUC 0.51, 95% CI 0.30–0.63, p=0.942), unlike our prediction model (AUC 0.68, 95% CI 0.52–0.84, p=0032).

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* Corresponding author.
E-mail address: anacatarina.faustino@gmail.com (A. Faustino).
[1] Centro Nacional de Colecção de Dados em Cardiologia, Sociedade Portuguesa de Cardiologia.

Conclusions: The GRACE score is suitable for risk assessment in octogenarians with NSTE-ACS, but the CRUSADE score is inadequate, and new scores are required to assess bleeding risk in this age-group.

PALAVRAS-CHAVE
Hemorragia;
Intervenção;
Mortalidade;
Octogenários;
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Síndromes coronárias agudas

Síndromes coronárias agudas sem supradesnivelamento-ST nos octogenários: aplicabilidade dos scores GRACE e CRUSADE

Resumo
Introdução: A avaliação do risco isquémico e hemorrágico é fundamental na abordagem dos idosos com síndromes coronárias agudas, mas tem sido pouco estudada.
Objetivo: Este estudo pretende avaliar a adequação dos *scores* GRACE e CRUSADE a doentes com síndrome coronária aguda sem supradesnivelamento-ST e idade ≥80 anos, e identificar os principais preditores de mortalidade intra-hospitalar e hemorragia *major* nesta população.
Métodos: Foram avaliados 544 doentes com idade ≥80 anos com síndrome coronária aguda sem supradesnivelamento-ST, incluídos no Registo Português de Síndromes Coronárias Agudas. Foram identificados os preditores de mortalidade intra-hospitalar e de hemorragia *major* durante o internamento. Criaram-se modelos preditores destes *endpoints*, posteriormente comparados com os *scores* GRACE e CRUSADE, e avaliada a sua adequação à população em estudo.
Resultados: A realização de coronariografia associou-se a redução do risco de mortalidade intra-hospitalar, sem aumento do risco de hemorragia *major* (OR 0,2, IC 95% 0,006-0,49, p=0,001). A hemorragia *major* foi preditora independente de mortalidade intra-hospitalar (OR 10,9, IC 95% 2,36-50,74, p=0,002), e associou-se a comorbilidades e à terapêutica farmacológica instituída. O *score* GRACE apresentou boa acuidade diagnóstica para mortalidade intra-hospitalar (AUC 0,75, IC 95% 0,63-0,87, p<0,001), mas o CRUSADE mostrou fraca capacidade discriminatória de hemorragia *major* (AUC 0,51, IC 95% 0,30-0,63, p=0,942), contrariamente ao modelo preditor (AUC 0,68, IC 95% 0,52-0,84, p=0,032).
Conclusões: O *score* GRACE é adequado para avaliação de risco nos octogenários, mas o CRUSADE é desajustado, sendo necessários novos *scores* para a avaliação de risco hemorrágico nesta faixa etária.

List of abbreviations

ACS	acute coronary syndrome
AUC	area under the curve
CAD	coronary artery disease
COPD	chronic obstructive pulmonary disease
IHM	in-hospital mortality
MB	major bleeding
MI	myocardial infarction
NSTE-ACS	non-ST-elevation acute coronary syndromes
NSTEMI	non-ST-elevation myocardial infarction
PM	prediction model
ProACS	Portuguese Registry on Acute Coronary Syndromes
UA	unstable angina

Introduction

Invasive treatment strategies, together with aggressive antithrombotic medication, have been shown to reduce ischemic complications in patients with non-ST-elevation acute coronary syndromes (NSTE-ACS), although at the cost of an increase in bleeding complications.[1–4] Weighing the risks and benefits of these therapies is crucial for reducing mortality in these patients, and the European Society of Cardiology (ESC) currently recommends the use of scores to stratify ischemic risk, such as the GRACE score,[5] and bleeding risk, such as the CRUSADE score.[6]

Advanced age is associated with greater prevalence and extent of coronary artery disease (CAD) and higher risk of ischemic complications and mortality; 30% of deaths related to myocardial infarction (MI) occur in patients aged over 85,[7] and most deaths in patients aged ≥75 years are of ischemic origin.[8] Given their increased risk, elderly patients would in theory benefit more from therapies that improve outcomes.[9–11] However, the particular characteristics of this