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ORIGINAL ARTICLE

Validity of the updated GRACE risk predictor (version 2.0) in patients with non-ST-elevation acute coronary syndrome

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KEYWORDS
Acute coronary syndrome;
GRACE risk score;
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Risk assessment

Abstract
Objectives: A new version of the Global Registry of Acute Coronary Events (GRACE) risk score (version 2.0) has been released recently. The purpose of the present study was to assess the validity of GRACE 2.0 for in-hospital and 1-year mortality in non-ST-elevation acute coronary syndrome (NSTE-ACS) patients.
Methods: The prospective cohort comprised 396 consecutive NSTE-ACS patients admitted to a tertiary hospital between May 2012 and January 2013. The main outcome measure was the discrimination and calibration performance of GRACE 2.0, which were evaluated with the area under the receiver operating characteristic curve (AUC) and the Hosmer-Lemeshow goodness-of-fit test, respectively.
Results: In-hospital and 1-year mortality were 2% (8/396) and 12.4% (48/388), respectively. The discrimination performance was inadequate (AUC=0.62) for predicting in-hospital mortality for the overall cohort. Also, the calibration performance for in-hospital mortality could not be evaluated due to the low number of patients who died. At one year, the Hosmer-Lemeshow p-values for all subgroups were >0.05, suggesting a good model fit, and the discrimination performance was good (AUC=0.77) for the overall cohort, driven mainly by better accuracy for low-risk patients.

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Conclusions: In a contemporary cohort of NSTE-ACS patients, GRACE 2.0 was valid for 1-year mortality assessment. Its value for in-hospital mortality requires validation in a larger cohort.

PALAVRAS-CHAVE
Síndrome coronária aguda;
Score de risco GRACE;
Mortalidade;
Prognóstico;
Avaliação do risco

Validade da atualização do preditor de risco GRACE (versão 2,0) em doentes com síndrome coronária aguda sem elevação do segmento ST

Resumo
Objetivos: Foi recentemente publicada uma nova versão do *score* de risco do *Global Registry of Acute Coronary Events* (GRACE). O objetivo do presente estudo consistiu em avaliar a validade da versão GRACE 2,0 em doentes com síndrome coronária aguda sem elevação do segmento ST (NSTE-ACS) internados e mortalidade a um ano.
Métodos: A coorte prospetiva compreendeu 396 doentes consecutivos com NSTE-ACS admitidos num hospital terciário entre maio de 2012 e janeiro de 2013. A principal medida do resultado foi a discriminação e o desempenho da aferição da versão 2,0 do estudo GRACE, avaliadas com a área sob a curva característica do recetor (AUC) e com o teste de adesão Hosmer-Lemeshow, respetivamente.
Resultados: O internamento e a mortalidade a um ano foram de 2% (8 em 396) e de 12,4% (48 em 388), respetivamente. O desempenho da discriminação foi inadequado (AUC = 0,62) para a previsão da mortalidade intra-hospitalar para a coorte global. Também a avaliação do desempenho da aferição para a mortalidade intra-hospitalar foi inapropriada devido ao reduzido número de mortes. A um ano, os valores-p Hosmer-Lemeshow para todos os grupos foram > 0,05 sugerindo um modelo adequado; e o desempenho da discriminação foi bom (AUC = 0,77) para a coorte global, orientada principalmente por uma melhor precisão para os doentes de baixo risco.
Conclusões: Num coorte contemporânea de doentes NSTE-ACS, o estudo GRACE 2,0 foi considerado válido para avaliação da mortalidade a um ano. O seu valor para a mortalidade intra-hospitalar requer validação numa coorte superior.

Introduction

Individualized risk stratification for optimal management of acute coronary syndrome (ACS) helps to identify high-risk patients who could benefit most from invasive strategies and prevents complications from unnecessary treatment in low-risk patients, in addition to helping with counseling on prognosis. Accordingly, clinical practice guidelines recommend that risk assessment should be initiated soon after admission, and that the Global Registry of Acute Coronary Events (GRACE) risk score should be preferred to all other risk scores because of its superior accuracy.[1–3] The GRACE risk score (version 1.0) was developed from a large multinational prospective patient registry and validated in several studies for the prediction of in-hospital and 6-month mortality rates across a wide range of ACS.[4–23] However, it was introduced in the 2000s and its predictive accuracy may not be adequate for current clinical practice, as use of evidence-based therapies has now increased.[1–3] An update (version 2.0) was therefore released recently.[24] The new risk score (GRACE 2.0) was presented as a more accurate tool than GRACE 1.0, with prediction of mortality over the longer term (1 and 3 years).[24] It was derived from the GRACE registry with over 32 000 patients enrolled between 2002 and 2007, from 14 countries in Europe, North and South America and Australia. However, this substantial geographic variation has led to the need for validation in different countries. Accordingly, the purpose of the present study was to validate GRACE 2.0 in Turkey.

Methods

Patient population

This was a prospective observational validation study of GRACE 2.0 for in-hospital and 1-year mortality in a contemporary cohort of patients with non-ST-elevation acute coronary syndrome (NSTE-ACS) (i.e. unstable angina [UA] and non-ST-elevation myocardial infarction [NSTEMI]) admitted to a tertiary hospital between May 2012 and January 2013. Patients with symptoms and signs compatible with ACS (acute chest pain or equivalent and/or elevated troponin levels, and/or ischemic electrocardiographic changes