Abstract: P1953

Risk of upper gastrointestinal bleeding following myocardial infarction: a novel prediction model for assessing appropriateness of proton pump inhibition therapy

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Background:

Upper gastrointestinal bleeding following myocardial infarction continues to be a severe complication associated with increased mortality; however, bleeding events might be avoided by appropriate therapy with proton pump inhibitors.

Purpose:

To develop and validate a prediction model aimed at identifying patients at increased risk of upper gastrointestinal bleeding following myocardial infarction.

Methods:

Based on multiple nationwide Danish registers, all patients initiating dual antiplatelet or anticoagulant therapy in combination with antiplatelet following myocardial infarction between 2003 and 2016 were identified. Primary outcome of interest was one-year risk of upper gastrointestinal bleeding. A derivation cohort including all patients between 2003 and 2013 was selected, whereas patients identified between 2014 and 2016 was employed for internal validation. Multiple logistic regression was used to predict person specific risks based on age, history of gastrointestinal bleeding or peptic ulcer, anaemia or gastrointestinal cancer, use of nonsteroidal anti-inflammatory drugs, oral anticoagulants, selective serotonin reuptake inhibitors or loop diuretics. We compared our model with the European Society of Cardiology (ESC) guideline recommendation on gastrointestinal bleeding risk assessment.

Results:

A total of 61 543 patients with myocardial infarction were identified for the study. In the total cohort, the median age was 68 years (IQR: 58-77), 85.0% (52 334) underwent coronary angiography, 2.6% (1 608) had a history of gastrointestinal bleeding and 7.1% (4 354) used oral anticoagulants. The average one-year risk of upper gastrointestinal bleeding was 1.04% (95% CI: 0.95-1.14%), and mean predicted risk of the model was 1.04% (IQR: 0.64-1.26%). The discriminative ability of the model evaluated by area under the curve was 74.2% (95% CI: 66.9-78.6%) in the validation cohort. The proposed risk model demonstrated improved sensitivity and specificity at the specific threshold of the ESC risk schemes (Figure 1). Results remain principally
unchanged regardless of inclusion or exclusion of patients initiating proton pump inhibitors at baseline. Furthermore, using cross-validation for the model evaluation produced similar discrimination results.

Conclusion:

Based on nationwide registers a novel prediction model aimed at identifying patients at increased risk of upper gastrointestinal bleeding was developed and validated; the model observed moderate discrimination in the validation cohort providing possible benefit for clinicians in terms of communicating absolute risk to the patients and determining the appropriateness of initiating preventive therapy.

Internal validation cohort (2014-2016)

Area under the curve for the prediction model:
74.2% (95% CI: 69.9-78.6%)

ESC risk scheme:
Sens; 52.3 (42.2-61.8)
Spec; 68.7 (67.9-69.5)
PPV; 1.3 (1.0-1.7)
NPV; 99.4 (99.3-99.6)