Abstract: P1757

GLP-1 levels predict cardiovascular risk in patients with acute myocardial infarction

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Topic(s):
Acute Coronary Syndromes: Biomarkers

Citation:

Background: Glucagon-like peptide 1 (GLP-1) is a gut incretin hormone, which induces post-prandial glucose-dependent insulin secretion. GLP-1 receptor agonists improve cardiovascular outcomes in patients with diabetes at high cardiovascular risk. We recently found GLP-1 levels to be increased in patients with acute myocardial infarction.

Purpose: The aim of this study was to assess the predictive capacity of GLP-1 for cardiovascular outcome in patients with myocardial infarction.

Methods: Total GLP-1 levels, NT-proBNP concentrations and the Global Registry of Acute Coronary Events (GRACE) score were assessed at time of admission in 918 patients with myocardial infarction presenting with acute chest pain. Among these 597 patients presented with NSTEMI and 321 with STEMI. The primary composite outcome of the study was the first occurrence of cardiovascular death, nonfatal myocardial infarction, or nonfatal stroke with a median follow-up of 311 days.

Results: Kaplan-Meier survival plots (separated by tertiles with cut-off values 35.44 and 53.45) and univariate cox regression analyses found GLP-1 values to be associated with adverse outcome (combined endpoint and all-cause mortality) (logarithmized GLP-1 values HR: 5.459; p<.0001). Further adjustment for age, sex, previous cardiovascular disease, diabetes, hypertension, hypercholesterinemia, creatinin, CRP, troponin T and NT-proBNP levels did not affect the association of GLP-1 with adverse outcomes (p=0.0341). Receiver operating characteristic curve analyses illustrated that GLP-1 is a strong indicator for early events (area under the curve of the combined endpoint at 7 days: 0.79; 14 days: 0.81; 30 days: 0.80 and 183 days: 0.64), which proved to be superior to Troponin T, serum creatinin, NT-proBNP and CRP within the first 100 days. Adjustment of the GRACE risk estimate by GLP-1 increased the area under the receiver-operating characteristic curve (AUC) after 1 month from 0.86 to 0.89 in NSTEMI patients. Addition of GLP-1 to a model containing GRACE and NT-proBNP led to a further improvement in model performance (increase in AUC from 0.88 for GRACE + NT-proBNP to 0.90 for GRACE + NT-proBNP + GLP-1).

Conclusion: GLP-1 is a new biomarker of cardiovascular risk and adverse outcomes in patients with acute myocardial infarction and improves the predictive value of the GRACE score in patients with NSTEMI.