

Discrimination of myocardial infarction and myocardial injury using a multibiomarker approach

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Background: In the Universal Definition of Myocardial Infarction (MI) myocardial injury was introduced as a specific diagnosis in patients with elevated troponin concentrations, but without evidence of acute myocardial ischemia. However, their differentiation within the acute setting might be challenging. Therefore, we sought to investigate a multibiomarker panel in these patients and determine the discriminative capacity to differentiation MI from myocardial injury.

Methods: We use a cohorts of acute patients presenting to the emergency department. All final diagnoses were adjudicated by two physicians in a blinded fashion and based on the fourth universal definition of MI. In case of disagreement a third physician referred. For the present analyses only patients diagnosed with MI or myocardial injury were used. A panel of 28 biomarkers was measured in blood samples collected directly at admission. Spearman correlations were calculated. A multivariable logistic regression model using MI as the dependent variable was used and the pre-

dictors were chosen via backward step-back selection. Odds ratios (OR) were calculated for each predictor.

Results: We included 359 patients; 138 were diagnosed as having MI and 221 has having myocardial injury. The median age of the study population was 73 years and 59.1% were males. Hypertension was diagnosed in 80.4%, dyslipidemia in 45.4% and diabetes in 19.0%.The biomarker panel showed a wide range of correlations (Figure 1). In the multivariable model five logarithmized biomarkers (N-terminal prohormone of brain natriuretic peptide [OR 0.62], pulmonary and activation-regulated chemokine [OR 0.51], tumor-necrosis-factor-receptor 2 [OR 2.22], copeptin [OR 1.59] and high-sensitivity troponin I [OR 1.80]) were significant discriminators between MI and myocardial injury. Internal validation of the model via bootstrap shows a for overoptimism corrected area under the curve of 0.84.

Conclusion: In the multivariable model five biomarkers were discriminators between MI and myocardial injury.

