

## Multibiomarker model to discriminate Type 1 and Type 2 myocardial infarction

J. Neumann, N.A. Soerensen, T.S. Hartikainen, P.M. Haller, J. Lehmacher, J. Weimann, S. Blankenberg, T. Zeller, D. Westermann

University Heart Center Hamburg, Clinic for General & Interventional Cardiology, Hamburg, Germany

**Funding Acknowledgement:** Type of funding source: Public grant(s) – National budget only. Main funding source(s): Research fellowship by the Deutsche Forschungsgemeinschaft

**Background:** The discrimination of patients with type 1 myocardial infarction (T1MI) from patients with type 2 MI (T2MI) is often challenging in the emergency department. Earlier we presented a discrimination model, which based on clinical variables, as well as on troponin concentrations. In the present analyses we sought to investigate the discriminative power of 28 biomarkers in patients with T1MI and T2MI.

**Methods:** Patients presenting to the emergency department with symptoms suggestive of MI were recruited. The final diagnosis of all patients was adjudicated by two physicians in a blinded fashion and based on the fourth universal definition of MI. For the present analyses only patients with T1MI and T2MI were used. In total 28 biomarkers were measured in blood samples collected directly at admission. A multivariable logistic regression model for T1MI vs T2MI as the dependent variable was used and the predictors were chosen via backward step-down selection.

**Results:** In total 138 patients (107 T1MI and 31 T2MI) were available for the analyses. The median age of the study population was 65 years and 66.7% were males. Hypertension was present in 77.4% and dyslipidemia in 41.3%. In the multivariable model four biomarkers (apolipoprotein A-II, n-terminal prohormone of brain natriuretic peptide, copeptin and high-sensitivity troponin I) were significant discriminators between T1MI and T2MI (Table 1). Internal validation of the model via bootstrap shows a for overoptimism corrected area under the curve of 0.82.

**Conclusion:** Using a multibiomarker approach discrimination between T1MI and T2MI could be improved. External validation of our findings is warranted.

Table 1. Results of multivariable logistic regression model for T1MI vs T2MI as the dependent variable

	Beta (95% CI)	Odds Ratio (95% CI)	p-value
Log Apolipoprotein A-II	-2.44 (-4.85, -0.33)	0.09 (0.01, 0.72)	0.033
Log N-terminal prohormone of brain natriuretic peptide	-0.65 (-1.04, -0.31)	0.52 (0.35, 0.73)	<0.001
Log Copeptin	0.68 (0.28, 1.13)	1.97 (1.33, 3.10)	0.0016
Log High-sensitivity troponin I	0.76 (0.45, 1.16)	2.15 (1.56, 3.18)	<0.001
Area under the curve overall model	0.82		