Predictors of cardiovascular magnetic resonance-derived microvascular obstruction on patient admission in STEMI.

Abstract: Early stratification of patients according to the risk for developing microvascular obstruction (MVO) after ST-segment elevation myocardial infarction (STEMI) is desirable. We aimed to identify predictors of cardiovascular magnetic resonance (CMR)-derived MVO from clinical+ECG, laboratory and angiographic parameters available on admission. Characteristics available on admission were documented in 97 STEMI patients referred for primary angioplasty. MVO was determined using contrast-enhanced CMR. MVO was present in 44 patients (45%). The C-statistic for predicting MVO was: clinical+ECG (.832), laboratory (.743), and angiographic parameters (.669). Adding laboratory to clinical+ECG information did not improve the C-statistic (.873 vs. .832, p=.2). Further addition of angiographic data (.904) improved the C-statistic of clinical+ECG (p=.04) but not of clinical+ECG and laboratory (p=.2). Independent predictors of MVO using clinical and ECG parameters were: Killip class>1 (OR 15.97 95%CI [1.37-186.76], p=.03), diabetes (OR 6.15 95%CI [1.49-25.39], p=.01), age10mm (OR 4.5 95%CI [1.58-12.69], p=.005) and delayed
presentation>3h (OR 3.80 95%CI [1.19-12.1], p=.02). A score was constructed assigning Killip class>1 2 points and the remaining indexes 1 point. The incidence of MVO increased with the score: 0 point: 8.7%; 1 point: 28.1%; 2 points: 71.4%; and 3+ points: 93% (p<.0001). MVO can be predicted using parameters already available on patient admission. We developed a clinical-ECG score allowing for early and reliable classification of STEMI patients according to the risk of MVO.