Hyperuricemia is a Predictor of Infarct Size in Patients with ST-Elevation Myocardial Infarction

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Among 1715 patients, admitted in ICCU Rambam Health Care Campus, Haifa, with acute ST-segment elevation myocardial infarction between January 2008 and March 2010, 356 consecutive patients (mean age 63+15, women 22%) without previous history of myocardial infarction, coronary angiography, angioplasty or bypass grafts, was retrospectively evaluated. Standard treatment included primary percutaneous coronary intervention (PCI) or thrombolytic therapy, aspirin, clopidogrel and statines. Blood samples for serum uric acid were collected during the first 48 hours of admission. Moderate HU was considered as level of uric acid>7 mg/dl and >6 mg/dl for men and women, respectively and severe HU >10 mg/dl for both sexes. Left ventricular ejection fraction (EF) measured by transthoracic echocardiography within first 5 days of admission.

Univariate analysis showed that moderate HU, OR 3.3 (95%CI 1.6-6.7), $P<0.001$; age>70 years, OR 3.6 (95%CI 1.9-6.9), $P<0.0001$; primary PCI, OR 0.3 (95%CI 0.2-0.6), $P<0.0001$; Killip II-III, OR 4.6 (95%CI 1.4-13.1), $P<0.0001$ and creatinine clearance test (CCT) <50 mg/dl, OR 6.5 (95%CI 3.0-13.9), $P<0.0001$ were a significant predictors for EF<40%, while severe HU, OR 15.7 (95%CI 4.1-59.9), $P<0.0001$ and Killip IV, OR 23.6 (95%CI 2.6-216.5), $P<0.005$ were a strongest predictors. Multivariate analysis after adjustment for age, Killip, CCT, diabetes and primary PCI, revealed that moderate HU reached borderline significance for prediction of EF<40%, OR 2 (95%CI 0.9-4.3), $P<0.09$, while Killip III, OR 4 (95%CI 2.0-7.9), $P<0.0001$; Killip IV, OR 16 (95%CI 1.6-159.0), $P<0.02$ and severe HU, OR 8.0 (95% CI 2.0-33.0), $P<0.004$ were independent predictors of EF<40%, area under ROC equal 0.73 (95% CI 0.66-0.81).

In patients presenting with first acute ST-segment elevation myocardial infarction, severe HU appear to be an independent predictor of larger infarct size.