Background: Left ventricular (LV) torsion, the net difference between apical and basal rotation during systole, is emerging as a sensitive parameter of LV systolic myocardial performance. Aim of the present study was to explore the effect of acute myocardial infarction (AMI) on LV torsion, and to determine the value of LV torsion early after AMI in predicting LV remodeling at 6-month follow-up.

Methods: A total of 120 patients with a first ST-elevation AMI (59±10 years, 73% male) were included. All patients underwent primary percutaneous coronary intervention. After 48 hours, speckle tracking echocardiography and myocardial contrast echocardiography were performed to assess LV torsion and infarct size. At 6-month follow-up, LV volumes and LV ejection fraction were reassessed, in order to identify patients who developed LV remodeling (defined as ≥15% increase in LV end-systolic volume).

Results: Peak LV torsion in AMI patients was significantly impaired, as compared to control subjects (1.54±0.64°/cm vs. 2.07±0.27°/cm; p <0.001). At multivariate linear regression analysis, only infarct size (β = -0.46, p <0.001), determined by MCE, was independently associated with peak LV torsion. At 6-month follow-up, 19 patients showed LV remodeling. At multivariate logistic regression analysis, only peak LV torsion (OR = 0.78; 95% CI 0.64-0.97; p = 0.021) was independently related to the development of LV remodeling. At receiver-operating characteristic curve analysis, peak LV torsion ≤1.44°/cm provided the highest sensitivity (95%) and specificity (77%) to predict LV remodeling.

Conclusions: LV torsion is significantly impaired early after AMI. The amount of impairment of LV torsion predicts LV remodeling at 6-month follow-up.