P762

Preserved mitral apparatus dynamics predict the improvement of acute ischemic mitral regurgitation: four-dimensional quantitative echocardiographic study

Kimura T.; Watanabe N.; Nishino S.; Kuriyama N.; Ashikaga K.; Nishihira K.; Furugen M.; Shibata Y.

Miyazaki Medical Association Hospital, Department of cardiology, Miyazaki, Japan

Background: We sought to evaluate the predictive value of acute stage mitral apparatus geometry and dynamics for the reduction of ischemic mitral regurgitation (IMR) in the remote phase after successful primary percutaneous coronary intervention (pPCI) by using real-time 3D-transthoracic echocardiography (3D-TTE).

Methods: We performed 2D and 3D-TTE in consecutive 44 first acute MI patients with more than mild IMR within 3 days after successful pPCI. 3DTTE of left ventricle (LV) volumes and mitral apparatus dynamics through the cardiac cycle were quantified offline. We compared the 3D geometric and dynamic parameters in the acute phase between 1)20 remained MR group and 2)24 improved MR group in 6-to-12 months after MI onset.

Results: Ejection fraction (EF) was preserved in the improved MR group compared to the remained MR group (49.0 ± 11.2 vs. 56.5 ± 7.0%, $p = 0.013$). Mitral valve annulus area, leaflet tenting length and papillary muscles spatial position had no significant difference between the two groups (all $p > 0.05$) throughout cardiac cycle. In contrast, mitral annulus saddle shape was preserved in the improved MR group than the remained MR group ($p = 0.010$) and annular area changed dynamically through early- to late-systole in the improved MR group (phasic $p = 0.017$) despite it was adynamic in remained MR group (phasic $p = 0.201$). Conclusions: IMR improvement in the remote phase after AMI associated with preserved EF, mitral annulus saddle shape and dynamics during systole in the acute phase of MI. 4D dynamics of the mitral apparatus can be clinically useful predictor of the improvement in acute IMR and may contribute to the clinical decision making including surgical or percutaneous intervention for IMR.