THE COMBINATION OF DYSSYNCHRONY AND GLOBAL LONGITUDINAL STRAIN BY 3D SPECKLE TRACKING AFTER ST-ELEVATION MYOCARDIAL INFARCTION IS USEFUL FOR PREDICTION OF FINAL INFARCT SIZE AND LEFT VENTRICULAR REMODELING

Poster Contributions
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Background: Left ventricular (LV) global strain estimated immediately after ST elevation AMI (STEMI) was reported as a predictor of LV remodeling. Furthermore, LV dyssynchrony estimated by 2D strain is also a prognosticator. However, strain analysis ideally should be assessed by 3D speckle tracking. We explored the usefulness of the combination of these two variable assessed by 3D speckle tracking in patients with a first STEMI.

Methods: 190 consecutive patients (131 men, age 65 years, peak CPK=3169 IU/l) presenting with a first STEMI who underwent primary PCI within 12 hours of onset were enrolled. Within 24 hours of PCI, echocardiography was performed by iE33. 3D speckle tracking was analyzed by 4D LV-Analysis (TOM-TEC, Germany). Global longitudinal strain was calculated (3D-GLS) and the standard deviation (SD) of time to regional peak 3D longitudinal strain (3D-Long-SD) for all 16 segments was assessed as the parameter of dyssynchrony. Final infarct size was defined using Tc99m-sestamibi at 2 weeks. Echocardiography was repeated 12 months later and LV remodeling was assessed.

Results: LV remodeling was observed in 52 patients at 12 months. Both 3D-GLS and 3D-Long-SD had significant relationships with infarct size (r²=0.236, 0.169, p<0.0001). Furthermore, both of the worst tertile of them predicted LV remodeling (Odds ratio = 0.371, 95%CI:0.182-0.753, p<0.001). (Odds ratio = 0.277, 95%CI:0.132-0.579, p<0.001). The combination of the worst tertile of these indexes gave us excellent accuracy of LV remodeling (Odds ratio = 0.221, 95%CI:0.093-0.508, p<0.001). It was more useful in patients with anterior MI. (Odds ratio=0.144, 95%CI:0.135-3.225, p<0.0001).

Conclusion: In patients with a first STEMI, GLS and LV dyssynchrony assessed by 3D speckle tracking echocardiography immediately after PCI can predict final infarct size and LV remodeling.