CLINICAL SIGNIFICANCE OF TWISTING MOTION ESTIMATED BY 3D SPECKLE TRACKING STRAIN ACUTELY AFTER ONSET OF ST-ELEVATION MYOCARDIAL INFARCTION

Poster Contributions
Hall C
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Authors: Noriaki Iwahashi, Masaomi Gohbara, Masaaki Konishi, Kengo Tsukahara, Yoshio Tahara, Kiyoshi Hibi, Masami Kosuge, Toshiaki Ebina, Satoshi Umemura, Kazuo Kimura, Yokohama City University Medical Center, Yokohama, Japan

Background: 3D speckle tracking echocardiography (3D tracking) is a novel promising tool that can accurately assess twisting motions. Twisting motion can provide a unique and useful estimation of cardiac function, but it should be measured using 3D tracking.

Methods: The study included 191 consecutive patients (163 men, 65 years, peak CPK=3133±3977IU/l) presenting with a first STEMI who underwent primary PCI within 12 hours of onset. Within 24 hours of PCI, 2D and 3D speckle tracking echocardiography were measured by iE33 and analyzed by Q-lab version 9.0 (CMQ, Philips) and 4D LV-Analysis (TOM-TEC, Germany). Final infarct size was defined using Tc99m-sestamibi as the total area of <50% uptake area at 2 weeks. Echo cardiography was repeated 12 months later and LV remodeling was defined as an absolute increase in LVEDV of 20%. BNP was obtained at 12 months.

Results: Both twisting and torsion estimated by the 3D speckle tracking echo had a significant relationship with infarct size (r=0.27, r=0.25, p<0.01, respectively), these relationships in patients with left coronary artery(r=0.3, r=0.35, p<0.001) were stronger than those with right coronary artery(r=0.21, r=0.15, p=n.s.). Furthermore, both motions could predict LV remodeling at 12 months (Twisting: Odds ratio=1.011, 95%CI 1.003-1.018, p<0.01, Torsion: 1.060, 95%CI 1.001-1.126, p<0.01,) and had good relationship with BNP at 12 months(r=0.24, =0.23 p<0.05, respectively).

Conclusions: In patients with a first STEMI, a decreased LV twisting motion assessed by 3D speckle tracking echocardiography immediately after PCI had a significant association with the final infarct size and EF at 2 weeks; furthermore, twisting could predict LV remodeling after 12 months. These motions might be more useful in patients with anterior or lateral STEMI.