

## [2251] Assessment of Global and Regional Left Ventricular Function After Acute Myocardial Infarction by 64-Slice MDCT - Comparison with MRI

**Ricardo C Cury, MD, Koen Nieman, MD, PhD, Cesar Higa Nomura, MD, Maros Ferencik, MD, Suhny Abbara, MD, Udo Hoffmann, MD, Herman K Gold, MD, Alope Finn, MD, Farouc A Jaffer, MD, IK-Kyung Jang, MD, PhD, Thomas J Brady, MD. Massachusetts General Hospital, Boston, MA**

**Introduction:** Multi-detector CT (MDCT) with improved temporal resolution may permit reliable evaluation of regional and global left ventricular function (LVF) in patients after myocardial infarction. We evaluated accuracy and inter-observer reproducibility of regional and global LVF assessment by 64-slice MDCT. **Hypothesis:** MDCT can evaluate global and regional LVF with good agreement as compared to the gold standard MRI. **Methods:** ECG-gated MDCT and MRI were performed in 11 patients (60±10 years) within a week after myocardial infarction and coronary stenting. MDCT scan protocol (Siemens Sensation 64): rotation time 330 ms, collimation 64×0.6 mm, 120 kV, 850mAs, 80-ml bolus of iopamidol 300 at 5 ml/s followed by 40 ml of saline. Consecutive 8-mm short-axis slices of the LV were reconstructed at 16 phases of the cardiac cycle by MDCT (temporal resolution range 87-165ms). MRI function protocol consisted of a stack of short-axis cine steady state free precession images in the short-axis of the left ventricle (temporal resolution ~ 40ms). Two independent blinded observers calculated ejection fraction (EF) using the Simpson's method for MRI and MDCT. MRI and MDCT images were co-registered at five short-axis levels by a study coordinator. Qualitative wall motion evaluation was then determined for 8 standardized segments per slice (40 segments per patient) using a 4 point-scale (normal, hypokinesis, akinesis, dyskinesis). **Results:** The global EF obtained by MDCT (mean 55±8%) correlated well ( $r=0.76$ ) with MRI (mean 57±7%). Bland-Altman analysis showed slight underestimation of EF by MDCT with a bias of  $-2\pm5\%$ . Inter-observer agreement for ejection fraction by MDCT ( $r=0.94$ , bias  $4\pm6\%$ ) and MRI ( $r=0.85$ , bias  $4\pm5\%$ ) were very good. Qualitative MDCT assessment of regional wall motion agreed with MRI in 86% of all segments (378/440). Considering only two categories (normal or abnormal wall motion), MDCT and MRI agreed in 91% of segments (399/440). Inter-observer agreement for qualitative wall motion by MDCT ( $r=0.96$ ) and MRI ( $r=0.92$ ) were very good. **Conclusions:** MDCT permits highly reproducible assessment of global and regional LVF in patients after acute myocardial infarction with good agreement compared to MRI as a gold standard.

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