MRI. Long axis function was assessed by measuring peak longitudinal strain (PS) and strain rate (SR) on TDI.

Results: Out of a total of 860 segments, CeMRI identified 206 scar segments of which 199 were subendocardial infarcts. There was significant preservation of contractile short axis function (EF and SS) in subendocardial infarcts compared to transmural infarcts. Similarly, long axis function on TDI showed significant preservation of PS but not SR in subendocardial infarcts.

Conclusion: Increasing TME is associated with deterioration of short and long axis contractile function. However, contrary to previous animal studies, some contractile function is preserved in subendocardial infarction. Further studies are needed to elucidate the anatomical orientation of different layers of fibres in the myocardium.

158 Comparison of time to peak velocity measurements by tissue synchronization imaging and 2-dimensional strain, a novel software to coronary angiography in patient with suspected coronary disease

K. I. Cho, J. H. Park, T. I. Kim. Maryknoll Hospital, Cardiology Dept., Busan, Korea, Republic of

Background: Several investigators have demonstrated that delayed myocardial shortening in the long axis and loss of relations between the long- and short-axis motion for patients with coronary artery disease. We proposed that delayed time to peak contraction velocity in regional myocardium as measured by Tissue Synchronization Imaging (TSI), which is a rapid and simple analysis method designed to simplify the detection of dysynchronous wall motion could potentially identify the group of patients manifesting myocardial asynchrony related to ischemia. And we also proposed that 2-dimensional(2D) strain on the basis of the estimation that a discrete set of tissue velocities are present per each of many small elements on the ultrasound image could measure deformation of normal and dysfunctional myocardium.

Methods: Novel computer software for tissue tracking echocardiography for advanced wall-motion analysis and TSI imaging(Visival 7 Dimension, GE Medical) were performed in 26 patients with chest pain but without visually apparent wall-motion changes by conventional two-dimensional echocardiography. Segmental longest time to peak contraction velocity(Tpv) was acquired by TSI imaging through 3 apical views. Radial(R) and circumferential(C) strains were measured through 3 level of short axis views. Longitudinal(L) and transverse(T) strains were measured through 3 apical views. Significant coronary disease was considered if stenoses > 50% from quantitative angiography.

Results: Delay in Tpv on 1 or more of the 12 nonapical segments was noted in 8 of 26 patients, who were subsequently found to have more than 70% coronary stenosis. The sensitivity, specificity, positive predictive value and negative predictive value for detecting abnormal deformation following ischemia(0.95, p<0.001 and r=0.97, p=0.0001)

Conclusion: The new ultrasound method of measuring TSI imaging and 2D strain demonstrates strong correlation with coronary angiography and would have the potential to improve identification and quantitation of coronary artery stenoses in patients with chest pain but without apparent wall-motion abnormalities on echocardiography.

159 Mean systolic annular velocity and strain score index: new and non-invasive parameters for the evaluation of acute myocardial infarction patients

B. Kayar, V. Ozar, E. Atalay, S. Askan, K. Ozturk, F. Oznur, S.S. Kes, Hacettepe University, Medical School, Cardiology Dept., Ankara, Turkey; Ankara, Turkey; Hacettepe, Biostatistic, Ankara, Turkey

Background: We aimed to evaluate the role of mean annular velocity and strain score index in the diagnosis of patients with acute myocardial infarction (AMI) and the relation of these parameters with left ventricular systolic function.

Methods: Seventy-two patients (55 male, mean age 59±12 years) with acute ST elevation myocardial infarction and forty age-matched healthy subjects were included in the study. Conventional echocardiography with tissue Doppler and strain analysis was performed during initial hospital admission. Peak systolic myocardial velocities were recorded from 4 different sites on the mitral annulus corresponding to the septum, lateral, anterior and inferior sites of the left ventricle by pulsed wave Doppler tissue imaging. A mean annular systolic velocity value was calculated from these sites. Also from the apical 4 and 2 chamber the peak systolic strain values of 12 segments (basal mid and apical segments of septum, anterior, lateral and inferior walls) were measured and a mean systolic strain score index was calculated.

Results: The patients with AMI had a significantly reduced mean annular systolic velocity compared with healthy subjects (5.5±2.1, 76 cm/s vs 9.6±2.2, 13 cm/s, P<0.001). A cut of value of 8.41 cm/s differentiated AMI patients from controls with 97.2% sensitivity, 93.3% specificity, 97.2% positive predictive value and 93.3% negative predictive value. The patients with AMI also have decreased mean systolic strain score index (11.2±2.8 vs 19.1±2.0, p<0.001). A cut of value of 15.35 differentiated AMI patients from controls with 94.4% sensitivity and 100% specificity. There was a good correlation between left ventricular ejection fraction and mean systolic annular velocity (r = 0.73, p < 0.001) and mean systolic strain score index (r = 0.68, p < 0.001).

Conclusions: The patients with first myocardial infarction have decreased mean systolic annular velocity and mean systolic strain score index. These two parameters might be useful in the diagnosis and follow up of patients with myocardial infarction. They also provide a simple, rapid, quantitative and non-invasive tool for assessing left ventricular systolic function in patients with first acute myocardial infarction.

160 Correlation of myocardial viability by strain rate imaging with left ventricular diastolic function in the early phase after acute myocardial infarction

W.-J. Chung, G. Heart center, Gachon medical school, Cardiology division, Incheon, Korea, Republic of

Background: Myocardial viability may influence the diastolic function of left ventricle(LV) reflecting chamber remodeling in early phase after acute myocardial infarction(AMI). However there were few reports about this relationship in human. In this prospective study, we aimed to evaluate whether myocardial viability by strain rate imaging has an influence on LV end diastolic pressure(LVEDP) in selected patients in the early phase after AMI.

Methods: Forty-four consecutive patients with AMI and anolic wall motion in at least one segment by baseline echocardiography underwent low-dose dobutamine echocardiography(upto 10mcg/kg/min) to assess myocardial viability on 5-9 days after event. Myocardial viability was quantitatively evaluated by two strain rate parameters (change of peak systolic strain rate (pSSR) and percent change of time to onset of regional relaxation (TR) and classical wall motion score index (WMSI)). And various echocardiographic parameters showing LV diastolic function were measured. Within 6 hoss after the study, left heart catheterization for record-