**Poster session 1**

Thursday, 8 December 2005, 8:30–12:30

**Location: Poster Area**

### ISCHAEMIC HEART DISEASE

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Dissociation between regional rotation and regional strain in the ischemic left ventricle

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**Background:** Global LV rotation measured by MRI has proven to be a sensitive marker of global ventricular function. Recently, 2-D speckle tracking echocardiography has been proposed as a bedside method for quantification of regional LV rotation. The aim of this study was to investigate the distribution of regional rotation in the ischemic ventricle and to define the relationship between rotation and regional strains.

**Methods:** In 11 healthy individuals and 13 patients with previous anterior myocardial infarction, LV apical short-axis recordings were obtained by conventional echocardiography. Combined circumferential strain (strain) and rotation were measured in the anterior (ischemic), septal (adjacent), lateral (adjacent) and posterior (remote) segments by 2-D speckle tracking echocardiography. Rotation was assessed from apical view.

**Results:** In healthy individuals, regional strain and rotation were homogenous in all segments (32.3±3.1% and 9.7±2.4°, respectively). In patients, however, strain was significantly reduced in ischemic and both adjacent segments (p<0.0001), while rotation was reduced only in the lateral segment (p<0.001). Strain in the septal and lateral segment were equally reduced in patients, 12.9±8.6% and 9.7±7.0%, respectively. In contrast, rotation in the septal segment (direction of global apical rotation) was almost twice rotation in the lateral segment (p<0.05).

**Conclusions:** Ultrasound-based strain imaging demonstrates a strong correlation with coronary angiography and would have the potential as a non-invasive diagnostic tool for detection of coronary artery stenosis in patients with chest pain but without apparent wall motion abnormalities on conventional echocardiography.

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Diagnostic value of ultrasound-based strain imaging to coronary angiography in patient with suspected coronary artery disease

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**Background:** Strain imaging has already been shown to quantify regional myocardial function in acute ischemic myocardium and infarcted myocardium.

**Methods:** In 30 patients with single coronary vessel disease (critical stenosis of Left Anterior Descending Artery), normal LV Ejection Fraction (EF) and lack of intraventricular conduction disturbances (without RBBB or LBBB) entered the study. The echocardiographic measurements of regional contractile function (IVCT' isovolumic contraction time) with use of PW-DTE was performed within the designated ischemic (basal and medial segment of anterior wall and interventricular septum) and non-ischemic (basal and medial segment of inferior wall) LV segments.

**Results:** 46 patients showed a constant systolic strain throughout the wall and no coronary lesion was found in 34 patients, 54 of 68 patients with marked nonuniformity of strain had angiographically significant coronary stenosis (Table 1). 13 of 14 patients with abnormal strain pattern with normal coronary showed abnormal apical strain, and 7 of 12 patients with normal strain pattern with significant coronary artery disease had multivessel stenosis. Strain value under -5.7% was considered as the best discriminating value for the presence of critical stenosis.

**Conclusion:** Ultrasound-based strain imaging demonstrates a strong correlation with coronary anatomy and would have the potential as a non-invasive diagnostic tool for detection of coronary artery stenosis in patients with chest pain but without apparent wall motion abnormalities on conventional echocardiography.

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Normal global left ventricular systolic function does not preclude significant contractile dysynchrony in stable ischemic heart disease

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The up-to-date literature reports validate the significant regional left ventricular (LV) contractile dyssynchrony in patients with severe impairment of LV systolic function and presence of intraventricular conduction disturbances. The extent and significance of LV dys synchrony as measured with use of Pulsed Wave Tissue Doppler Echocardiography (PW-DTE) in the ischemic heart disease patients with well preserved left ventricular systolic function or without history of severe myocardial infarction has not been thoroughly investigated as yet.

**Aim:** Assessment of LV contractile dysynchrony in patients with stable ischemic heart disease and normal LV systolic function.

**Methods:** 30 patients with single coronary vessel disease (critical stenosis of Left Anterior Descending Artery), normal LV Ejection Fraction (EF) and lack of intraventricular conduction disturbances (without RBBB or LBBB) entered the study. The echocardiographic measurements of regional contractile function (IVCT' isovolumic contraction time) with use of PW-DTE was performed within the designated ischemic (basal and medial segment of anterior wall and interventricular septum) and non-ischemic (basal and medial segment of inferior wall) LV segments.

**Results:** 46 patients showed a constant systolic strain throughout the wall and no coronary lesion was found in 34 patients, 54 of 68 patients with marked nonuniformity of strain had angiographically significant coronary stenosis (Table 1). 13 of 14 patients with abnormal strain pattern with normal coronary showed abnormal apical strain, and 7 of 12 patients with normal strain pattern with significant coronary artery disease had multivessel stenosis. Strain value under -5.7% was considered as the best discriminating value for the presence of critical stenosis.