Abstract: **P1539**

**Role of global longitudinal strain diastolic index in assessment of coronary artery disease in patients with stable angina and normal or borderline ejection fraction**

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Background Previous studies demonstrated that 2 D strain imaging segmental transverse diastolic index is a marker of regional ischemia and that global longitudinal strain diastolic index (GLSDI) correlates with left ventricular (LV) filling pressures and NTproBNP. However, usefulness of GLSDI in clinical practice has to be established.

Purpose The aim of the study is to examine the utility of global longitudinal strain diastolic index in the assessment of patients with suspected ischemic heart disease (IHD).

Methods We performed 2 D standard echocardiography and strain imaging in 30 healthy subjects and in 148 patients with stable angina with indication for coronary angiography. Patients with severe symptoms, severe valvulopathy, arrhythmia and/or ejection fraction (EF) less than 45% were excluded. Standard echocardiographic parameters, left ventricular global longitudinal strain (LVGLS) and global longitudinal strain diastolic index were analysed. The patients subsequently underwent coronary angiographic examination. Results GLSDI was significantly lower in angina pectoris vs control group (0.41 vs 0.69, p <0.001). After coronaryography patients were divided in three subgroups: 74 patients (50%) with more than 50% obstruction in any major artery, 26 patients (17.5%) with previous revascularisation but no significant obstructive lesions at present and 48 patients (32.5%) without obstructive artery disease. Average GLSDI was significantly lower in the subgroup with obstructive coronary disease vs the other two subgroups (0.32 vs 0.41 and 0.46 respectively, p<0.05). Mean LVEF was different in subgroups but with no statistical significance (50 % vs 48 % vs 54 %, p= 0.08). Mean LVGLS was lower in the obstructive artery disease subgroup (-16.4% vs -18.2% vs -21% respectively, p < 0.05). In univariate analysis lower GLSDI was associated with a higher risk of coronary artery disease (Hazard Ratio 1.39, 95% Confidence Interval 1.09-1.49; p<0.05 per 0.1% decrease). There was significant correlation between reduced GLSDI and the presence of coronary artery disease (r=-0.54, P<0.05), hypertension (r=- 0.61, p<0.05), left ventricular hypertrophy (-0.68, p<0.05) and diastolic dysfunction (-0.69, p<0.05). GLSDI lower than 0.5 had a good sensitivity (84%) and negative predictive value (71%) and a lower specificity (40%) and positive predictive value (52%) for detection of ischemic heart disease.

Conclusions Global longitudinal strain diastolic index is significantly lower in patients with stable angina and normal or borderline reduced ejection fraction compared with normal subjects. A cut off value lower than 0.5 selects patients with a higher probability of obstructive coronary heart disease.