Abstract: **P1502**

**The detection of coronary microvascular disease by means of two-dimensional speckle-tracking echocardiography**

**Authors:**
O M Galuszka¹, D Steffens¹, J Friebel¹, U Rauch-Krohnert¹, U Landmesser¹, M Kasner¹, ¹Charite - Campus Benjamin Franklin, Department of Cardiology - Berlin - Germany,

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**Background**
Coronary microvascular disease (MVD) is manifested by an angina-like chest pain with a positive response to exercise stress testing and normal coronary angiographic findings. The development of new imaging modalities, such as two-dimensional speckle tracking echocardiography (2D STE), provides a method for the non-invasive assessment of global and local LV function. Previous studies have indicated that 2D STE is more sensitive than conventional echocardiography parameters for detecting subclinical ventricular dysfunction in various clinical disorders.

**Aim**
The aim of this study was to evaluate the role of left ventricular (LV) systolic strain assessed by two-dimensional speckle-tracking echocardiography for the early detection of myocardial dysfunction in patients with stable angina and proven coronary microvascular disease.

**Methods**
We compared 45 patients with angiographically documented normal coronary arteries with coronary microvascular disease defined by reduced coronary flow velocity reserve (CFVR<2, assessed by Doppler echocardiography) with 32 healthy persons as a control group (CFVR>2). Exclusion criteria for both groups were valvular heart disease, cardiomyopathies, inflammatory diseases, myocarditis, vasculitis, arthropathies, Tietze's syndrome, gastrointestinal diseases, aortic diseases, arrhythmias, liver diseases, and alcohol use. All subjects underwent conventional echocardiography including speckle-tracking analysis to assess resting LV function. STE measures were taken from all 16 wall segments. Student's t-test and chi-square test were used to statistically analyze data.

**Results**
LV systolic function assessed by means of LV ejection fraction (LVEF) was similar for both groups (62.7 vs. 60.6%). Patients with MVD had significantly impaired diastolic function compared with healthy individuals (E/E' 9.5±2.7 vs. 7.7±2.9, p<0.05). Moreover, global longitudinal strain (GLS; -15.8±2.8% vs. -17.6±2.5%; p<0.001) was significantly lower in patients with MVD than in healthy control patients. On the other hand, patients with arterial hypertension presenting with stable angina showed no significant impairment in microvascular (n=16) LV function assessed by means of 2D STE (-17.2±2.7% vs. -17.6±2.4%; p=0.82).

**Conclusions**
Despite normal LVEF significant impairment of LV longitudinal myocardial systolic function was detected with STE in patients with MVD. Therefore, atherosclerosis of small coronary arteries and microvascular dysfunction affects myocardial longitudinal strain which may contribute to patient clinical outcome.