Abstract: P935

A new role of imaging in the diagnosis of microvascular angina: layer-specific strain analysis during dipyridamole stress echocardiography

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Background: Coronary artery disease (CAD) is the major cause of heart failure in developed countries. Dipyridamole stress echocardiography (DSE) is a paramount II level test in patients with suspected CAD. While in patients with a positive DSE (symptoms, ECG abnormalities, regional wall motion alteration), the role of imaging is clear in helping the Cardiologist to make a diagnosis, the role of echocardiography is still negligible in microvascular angina.

Purpose: To evaluate the layer-specific left ventricular (LV) longitudinal (LS) and circumferential (CS) strain by Speckle Tracking Echocardiography in patients with suspected CAD undergoing DSE and to evaluate its capability to discriminate between patients with a negative and indicative for microvascular angina DSE.

Methods: We enrolled 66 patients with known or suspected CAD underwent DSE (dipyridamole 0.84 mg/kg over 6 minutes). 3 groups were identified according to the result of DSE and, when indicated, according to the result of the following coronary angiography (36 negative DSE, 19 positive DSE, 11 indicatives for microvascular disease). Wall motion score index (WMSI), ejection fraction (EF), global LV LS and CS (GLS and GCS) and layer-specific LV endocardial, midwall and epicardial LS and CS were measured both at rest and peak stress.

Results: The values of EF and WMSI did not significantly differ between baseline and peak. The GLS increased from basal to peak both in patients with negative DSE test and in microvascular disease while it decreased in positive DSE. LS had the same trend, with the higher statistical significance (over all p<0.0001) when evaluated at endocardial level. GCS was higher in negative DSE after the administration of the drug but not in those with positive DSE. Focusing the attention on negative DSE and microvascular angina, we demonstrated how, at peak, the values of GLS and endocardial CS but mostly GCS strain were significantly different. In fact, while in negative DSE GCS increased, it was stable in microvascular angina (mean delta value 1.8% vs 0.4% for endocardial CS, p=0.001, 2.0% vs 0.2% for GCS, p<0.0001, Fig. 1).

Conclusions: STE analysis, applying to DSE, may represent a valuable imaging tool in the diagnosis of microvascular angina. GCS allowed to discriminate between negative DSE and microvascular disease.
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![Bar charts showing endocardial and global myocardial circumferential strain](image)