Abstract: P1334

Correlation between myocardial strain and non-invasive myocardial work indices: results from the eacvi norre study

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Background: Myocardial work (MW) is a parameter of myocardial function, which takes into account deformation as well as afterload. Left ventricle (LV) pressure-strain loops (PSLs) are a novel and reliable tool for the non-invasive assessment of MW.

Purpose: The present study sought to evaluate the correlation between indices of non-invasive MW and LV volumes, traditional and advanced parameters of LV systolic function by 2D echocardiography.

Methods: A total of 226 (mean age: 44.7±13.2 years) healthy subjects were enrolled at 22 collaborating institutions of the Normal Reference Ranges for Echocardiography (NORRE) study. Global Work Index (GWI), Global Constructive Work (GCW), Global Work Waste (GWW) and Global Work Efficiency (GWE) were estimated by LV PSLs using custom software. Peak LV pressure was estimated non-invasively from brachial artery cuff pressure. LV end-diastolic (EDV) and end-systolic (ESV) volumes, LV mass, LV stroke volume (SV), LV ejection fraction (EF) were measured. As advanced indices of myocardial performance, global longitudinal (GLS), circumferential (GCS) and radial (GRS) strain were obtained.

Results: On multivariable analysis, GWI was significantly correlated with GLS (p< 0.001), EF (p= 0.005), SBP (p<0.001) and GRS (p=0.002), while GCW was correlated with GLS (p<0.001), SBP (p<0.001), SV indexed (p=0.02), and GRS (p=0.002). GWE was also correlated with EF (p= 0.001), while GWW was inversely correlated with EF (p=0.008).

Conclusions: The non-invasive MW indices show a good correlation with traditional 2DE parameters of myocardial systolic function and myocardial strain.