

 IMAGING AND DIAGNOSTIC TESTING

IMPACT OF LOADING CONDITION ON THE TWO-DIMENSIONAL SPECKLE TRACKING-DERIVED LEFT VENTRICULAR DYSSYNCHRONY INDEX IN NON-ISCHEMIC DILATED CARDIOMYOPATHY

ACC Poster Contributions
 Georgia World Congress Center, Hall B5
 Tuesday, March 16, 2010, 9:30 a.m.-10:30 a.m.

Session Title: Tissue Imaging: Echocardiographic Assessment of Ventricular Function
 Abstract Category: General Echocardiography: TTE
 Presentation Number: 1255-211

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Background: We modified LV loading conditions to reveal its influence on echocardiography-derived LV dyssynchrony index (LVdys) in patients with non-ischemic dilated cardiomyopathy(DCMP)

Methods: 37 patients with DCMP were consecutively enrolled. After baseline measurements, pneumatic compression of lower extremities(Pcom) (Left Fig) was employed to increase LV afterload and subsequently sublingual nitroglycerin(SL-NG) was administered for preload modification. LVdys(from speckle tracking-derived radial strain analysis) and LV end-systolic wall stress(LV-ESWS) were calculated in each stage.

Results: Considering all 6 segments, both LVdys-6 and LV-ESWS increased under Pcom. After SL-NG, both parameters decreased (Right Fig). When LVdys was defined as the absolute difference in time-to-peak radial strain between the anteroseptal and posterior segments(LVdys-2), the results were unchanged. Using 130msec as a cutoff value for the presence of LVdys, the proportion of patients with LVdys changed significantly(29.7% at baseline, 45.9% under Pcom, and 35.1% after SL-NG). LVdys and LV-ESWS showed a significant association with each other($R=0.47$, $P<0.001$ for LVdys-6 and $R=0.41$, $P<0.001$ for LVdys-2).

Conclusions: We showed the significant association of LVdys with LV loading status, implying a dynamic nature of LVdys. Thus, LV loading conditions should be considered when echocardiographic LVdys is applied in clinical decision-making or is employed as a marker of prognosis.

Pneumatic compression (Pcom)



Change in LVdys-6 (A) and LVdys-2 (B) under different loading conditions

