



Imaging

EXAGGERATED BLOOD PRESSURE RESPONSE TO EXERCISE IS RELATED WITH SUBCLINICAL MYOCARDIAL DYSFUNCTION IN NORMOTENSIVE SUBJECTS

Poster Contributions

Poster Sessions, Expo North

Sunday, March 10, 2013, 3:45 p.m.-4:30 p.m.

Session Title: Imaging: Echocardiographic Imaging of Patients with CAD: I

Abstract Category: 18. Imaging: Echo

Presentation Number: 1267-329

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Background: An exaggerated blood pressure (BP) response to exercise is related with high risk of future hypertension and left ventricular (LV) hypertrophy even in normotensive subjects. We hypothesized that subclinical impairments in myocardial deformation would be present in normotensive subjects with exaggerated BP response to exercise, despite of normal ejection fraction. So, we evaluated global ventricular and atrial function using speckle tracking echocardiography in normotensive subjects with exaggerated BP response to exercise.

Methods: Two-dimensional, speckle tracking echocardiography and treadmill exercise test were performed simultaneously in 119 normotensive subjects (69 males, 50 females; mean age: 48 ± 8 years) without any structural heart disease and LV dysfunction. Global longitudinal strain and strain rate of left atrium (LA) and LV were measured using dedicated software.

Results: Among 119 normotensive subjects who underwent echocardiography and treadmill exercise test, 29 subjects (24%) presented exaggerated BP response (≥ 210 mmHg for men and ≥ 190 mmHg for women) during treadmill test. The resting peripheral BP was not different between subjects with and without exaggerated BP response to exercise. LV systolic function, diastolic function and LV mass were also similar between two groups. However, the subjects with exaggerated BP response to exercise showed more decreased global longitudinal strain of LV ($18.6 \pm 2.2\%$ vs $20.0 \pm 2.2\%$, $p=0.01$) and LA ($31.8 \pm 6.4\%$ vs $37.4 \pm 8.6\%$, $p=0.02$) than the subjects without exaggerated BP response to exercise. The systolic BP at peak exercise showed negative relationships with global longitudinal strain of LV and LA ($r=-0.34$, $p<0.01$; $r=-0.36$, $p<0.01$).

Conclusion: The normotensive subjects with exaggerated BP response to exercise presented subclinical impairments in global longitudinal LV and LA strain despite of normal ejection fraction and LV mass. Even without apparent hypertension, exaggerated BP response to exercise could increase afterload repeatedly and result in myocardial dysfunction.