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DETECTION OF MULTI-VESSEL DISEASES IN ELDERLY PATIENTS USING DELTA-LONGITUDINAL STRAIN WITH ADENOSINE-STRESS ECHOCARDIOGRAPHY : COMPARISON WITH TI-201 SPECT

ACC Poster Contributions

Ernest N. Morial Convention Center, Hall F

Monday, April 04, 2011, 9:30 a.m.-10:45 a.m.

Session Title: Selected Topics in Stress Echocardiography

Abstract Category: 33. Stress Echocardiography

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Background: Longitudinal strain (LS) measured by Two-dimensional speckle tracking method can provide accurate assessment of myocardial ischemia using dobutamine stress echocardiography (DSE). However, proarrhythmic effect of dobutamine is well known especially in elderly patients with MVD or left ventricular dysfunction.

Purpose: We evaluated whether LS by using adenosine-stress echocardiography was feasible to detect myocardial ischemia in elderly patients with MVD (double- or triple-vessel diseases) compared with TI-201 myocardial SPECT.

Methods: We performed echocardiography and TI-201 myocardial SPECT in 8 normal subjects (78.0 ± 6.2 years) and 20 patients (73.5 ± 8.5 years) with MVD diagnosed with coronary angiography. We obtained the apical long-axis, 2- and 4-chamber views at rest and during stress test. LS was calculated off-line using Echopac software (GE Medical Systems) in 17 segments. We defined LS in antero-septal (AS) and anterior (A) segments as left anterior descending region, lateral (L) and posterior (P) segments as left circumflex coronary artery region, and inferior (I) and septal (S) segments as right coronary artery region.

Then we calculated subtraction of averaged LS (base and mid level) between at rest and during stress test (Delta-LS) as an index of segmental ischemia in each 6 segment (AS, A, L, P, I and S). We compared the accuracy of diagnosis of coronary artery disease (CAD) between Delta-LS and TI-201 myocardial SPECT.

Results: CAD were detected in 51 of 60 vessels (2-vessel diseases in 9 patients and 3-vessel diseases in 11). Delta-LS in the segments with significant coronary stenosis was larger than that in normal subjects (7.5 ± 4.3 vs. 2.7 ± 2.4 , $P < 0.0001$). CAD was diagnosed by Delta-LS (optimal cutoff value=3.5) with a sensitivity of 92.3% (vs. 51.4% of TI-201 myocardial SPECT), a specificity of 73.8% (vs. 86.7%), respectively.

Conclusion: Delta-LS with adenosine-stress echocardiography is feasible for detecting MVD. This method may be adequate alternative to DSE and TI-201 myocardial SPECT for detecting myocardial ischemia in elderly patients.