



CAN WE PREDICT SEVERE CAD WITH 2-DIMENSIONAL SPECKLE TRACKING ECHOCARDIOGRAPHY IN WOMEN WITH NORMAL LEFT VENTRICULAR FUNCTION

ACC Moderated Poster Contributions
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Background: Systolic strain (S) and strain rate (SR) measurements have been shown to be more sensitive than standard echocardiographic parameters in assessing left ventricular systolic function in patients with normal LV ejection fraction (EF). The aim of this study was to assess parameters of S and SR as well as left ventricular synchrony with two-dimensional speckle tracking echocardiography (2D STE) in healthy women to define the normal values and compare them to women with known CAD.

Methods: Patients included women who underwent an exercise stress echocardiogram with a subsequent coronary angiogram displaying the presence of severe coronary artery disease (CAD). Controls were women with very low pretest probability of CAD, no comorbidities, and normal echocardiogram. Evaluations were performed at the Mayo Clinic between 2008 and 2010.

Results: There were 35 CAD and 35 gender-matched control patients; all had normal EF. Mean 2D-STE findings (for CAD vs control groups) are as follows: Circumferential S (-19.39% vs 22.34%, $P = .02$), SR (-1.298 vs -1.43, $P = 0.126$); Radial S (49.10% vs 33.38, $P = 0.0217$), SR (2.399 vs 1.845, $P = 0.0473$); Global Longitudinal LV S (14.28% vs 17.23%, $P = .001$), SR (-0.9156 vs -0.9918, $P = 0.095$); SD Global Longitudinal LV S TTP (99 msec vs 33 msec, $P < .0001$). To assess mechanical synchrony, the standard deviation of the global longitudinal TTP S was computed for each subject in the CAD and control groups, respectively (99.36 ms vs 32.83 ms, $P < .001$). ROC and AUC were calculated for each variable; the cutoff value of -15.9% for global longitudinal S had 71% sensitivity and 75% specificity with an AUC of 0.74 in differentiating the CAD group from control. The cutoff value of 45msec for SD Long S TTP had 97% sensitivity and 92% specificity, with an AUC of 0.95. The combined AUC curve for global longitudinal, circumferential strain and SD Long S TTP had an AUC of 0.96.

Conclusion: In women with normal resting 2D echocardiography, those with angiographically-proven severe CAD could be identified by the presence of dyssynchrony and abnormal 2D strain values. This new method could be applied to female patients with suspicion of CAD and normal EF.