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Imaging

TRANSTHORACIC ENHANCED DOPPLER ECHOCARDIOGRAPHY-ASSESSED ABSENCE OF ATHEROSCLEROSIS IN THE LEFT ANTERIOR DESCENDING CORONARY ARTERY RULES OUT CRITICAL RIGHT AND/OR CIRCUMFLEX CORONARY ARTERY DISEASE

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

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Authors: *Carlo Caiati, Mario Lepera, Daniela Santoro, Dario Grande, Antonio Tito, Nicola Tarantino, Stefano Favale, University of Bari, Italy*

Background: The left anterior descending coronary artery (LAD) is the coronary most frequently affected by atherosclerosis (CAD) and it is reasonable to expect that advanced CAD already causing a significant obstructing plaque of the right (RCA) and/or circumflex (LCX) coronary arteries will, at least minimally, involve the LAD. LAD CAD, both critical and subcritical, can be reliably assessed by transthoracic enhanced echo Doppler of the coronaries (CED) in convergent color Doppler mode. This approach consists of recording LAD blood flow velocity in order to detect any acceleration at the stenosis site over the entire LAD. We aimed at verifying the value of atherosclerotic plaques (either mild or critical) in predicting significant CAD (>50% diameter lumen narrowing) of the LCX and/or RCA, as assessed by CED over the entire LAD.

Methods: CED in convergent color Doppler mode was performed in 153 consecutive patients scheduled for catheterization. Color guided pulsed wave Doppler mapping of the whole LAD (specifically the proximal, mid and distal parts) was performed to obtain the maximal and reference blood flow velocity, for each segment. If the % increase of velocity was higher than 30% (a previously validated cutoff for detecting CAD), to grade the stenosis severity the % stenosis area was calculated by applying the continuity equation.

Results: CED feasibility was 100%. Coronary angiography revealed critical stenosis affecting the LCx and/or RCA in 49 pts (32%) and none in 104 (68%). CED showed at least one stenosis in LAD (% increase of velocity > 30%) in 99 pts (64%) (mild in 79 pts and critical in 20 pts, % area narrowing = 45%±13 and 84%±3, respectively) and none in 54 (35%). The absence of LAD CAD, as assessed by CED, very reliably rules out critical stenosis of the LCX and/or RCA : CED sensitivity, specificity, positive and negative predictive values were 94% (46/49; 95% CI 83-99%), 50% (51/104; 95% CI 40-60%), 47% (46/97; 95% CI 37-58%) and 94% (51/54; 95% CI 85-99%), respectively (p<0.001):

Conclusion: CAD assessment in the LAD by CED is very reliable as a means of ruling out a significant CAD of the RCA and/or LCx; the poor positive predictive value is to be expected as CAD often involves only the LAD.