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Velocity Characteristics of the Normal Left Anterior Descending Coronary Artery Depend on Mode of Determination: Angiogarphic or Stress-Echographic

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Normal left anterior descending coronary artery (LAD) as determined by coronary angiography is considered equivalent to normal LAD as evaluated by noninvasive studies like dobutamine stress echocardiography (DSE) or to other methods of clinical evaluation. However, subjects who undergo coronary angiography may differ from those who do not need to have invasive evaluation even if there coronary arteries were considered normal by angiography.
Aim: Compare LAD velocities in subjects with normal angiography and those with normal DSE.
Methods: 244 subjects were evaluated, 78 had normal LAD by angiography and 166 had normal LAD by DSE. All had Doppler sampling of LAD velocities by trans-thoracic echocardiography.
Results: Velocity was higher in the angiographic subgroup in diastole 41±23, vs 33±14 cm/sec, p=0.0078, in systole 18±14 vs 13±7 cm/sec, p=0.012, diastolic integral 12.6±5 vs 9.8±3.8 cm, p=3.15×10-5, systolic velocity integral 4±2.9 vs 2.8±1.9, p=0.0014. While heart rate was similar in both groups, the product of diastolic velocity integral and heart rate of the LAD in the angiographic group was higher 902±450 vs 743±363, p=0.00599. Diastolic velocity deceleration time was similar in both groups. Coronary flow reserve defined as diastolic velocity ratio before and immediately after DSE correlated negatively with baseline velocity, r= -0.4.
Conclusions: Mode of defining normality of coronary artery affects velocity behavior of the vessel, reflecting functional differences possibly related to microvasculature and vasodilatation.