Trasnthoracic Doppler Sampling of Left Anterior (LAD) and Posterior Descending (PDA) Coronary Artery Blood Velocities: A Step Towards Comprehensive Noninvasive Coronary Artery Velocity Evaluation

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Recent developments in echocardiography made transthoracic echocardiography (TTE)-Doppler sampling of coronary artery velocities possible. Sampling of left anterior descending (LAD) or posterior descending (PDA) coronary artery velocities by TTE- Doppler is feasible. Aim: Evaluation of feasibility of TTE-Doppler sampling of both the LAD and PDA velocities. Methods: Forty nine subjects, were studied, weight 77.6±16.5 kg. range 46-116 kg. Transthoracic Doppler sampling of the LAD from modified parasternal short axis view and of the PDA from modified apical two-chamber views using 3.5 MHZ transducers was attempted. Results: Successful TTE sampling of the LAD velocities is possible almost in all. Thus, if PDA Doppler sampling was achieved, then velocity evaluation of both the LAD and PDA was possible in all. Peak PDA velocities in diastole 51.1±15.9 cm/sec were higher than in systole 23.2±6 cm/sec, $p<0.001$, similar to the case of the LAD. Time velocity integral in diastole 15.9±5.4cm were higher than in systole 5.1±2.1 cm, $p<0.001$. Diastolic pressure half time averaged 178.3±65 msec and deceleration time 597±212.6 msec. Flow in the PDA in diastole 43.7±20.6 ml/min was higher than in systole 13.8±6.7 ml/min, $p<0.001$. Diastolic to systolic velocity ratio averaged 2.28±0.67, and was less than 1.5 in 3 subjects with severe PDA stenosis. Conclusions: Sampling of Doppler velocities of both the LAD and PDA using TTE is feasible. Diastolic velocities, time velocity integrals and flows were higher than the systolic parameters. Sampling of LAD and PDA velocities may be used in the evaluation of subjects with coronary artery disease and can detect severe PDA stenosis.