Evaluation of cardiac function with tissue Doppler echocardiography in normotensive offsprings of hypertensive parents

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Introduction: Early alterations in the cardiovascular system have been described in the normotensive children of hypertensive parents (NCHP). We aimed to identify left ventricular structural and functional changes in NCHP for predicting hypertension that may be developed in the future.

Methods: Ninety-two children who had a history of parental hypertension and 90 children whose parents were normotensive were included in the study. The left ventricular structure and function were evaluated by tissue Doppler imaging and conventional echocardiography methods such as M-mode and pulsed wave Doppler for this purpose in two groups.

Results: There were no statistical difference between gender, age, weight, height and body mass index in two groups (p > 0.05). The mean systolic and diastolic blood pressure values were higher in the NCHP group (p = 0.003, p = 0.001, p < 0.001 respectively). Interventricular septum and left ventricular posterior wall thickness and relative wall thickness (RWT) were higher in NCHP group (p = 0.029, p = 0.016, p = 0.041, respectively). Septal and lateral mitral annular isovolumetric relaxation time (IRT) and myocardial performances index (MPI) with TDI were higher (p < 0.001, p < 0.001, p = 0.001, p = 0.001, respectively), ejection time was shorter (p = 0.015, P < 0.02), septal isovolumetric contraction time (IVCT) determined longer in NCHP group (p < 0.002). There was positive correlation between lateral and septal MPI with systolic blood pressure and a negative correlation with ejection fraction (p = 0.042, p = 0.025, p = 0.032, p = 0.044 respectively). There was no difference between septal and lateral MPI measures for detecting ventricular dysfunction in normotensive children of hypertensive parents (p > 0.05).

Conclusions: Systolic and diastolic dysfunction that accompanied by morphological changes in left ventricle were shown by TDI in normotensive children of hypertensive parents, even if there are not signs of clinical hypertension.