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Left Ventricular Torsion in Clinically Stable Heart Transplant Recipients in Children

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Background

Left ventricular (LV) rotation is the dominant deformation during relaxation and links systole with early diastolic recoil. In adult heart transplant recipients, LV twist dynamics are significantly impaired. This study was aimed to explore LV twist in clinically stable heart transplant (HT) recipients in children.

Methods

Thirteen children underwent orthotopic heart transplantation (HT) in our hospital in last four years. In all HT recipients underwent scheduled cardiac catheterization and endomyocardial biopsy. Two dimensional and colour M-mode echocardiography with speckle-tracking analysis were performed to evaluate the changes of left ventricular systolic strain in heart transplant recipients at 1st, 3rd, 6th, 12th, 18th, 24th and 30th month after heart transplantation, and 10 healthy subjects served as controls. The strain curves and peak systolic strain values for each segment and overall left ventricular wall were obtained. Left ventricular global longitudinal strain (GLS), global radial strain (GRS), global circumferential strain (GCS) and left ventricular torsion (LV TOR) were measured and then statistically analyzed

Results and Conclusion

There were no significant differences in left ventricular ejection fraction (LVEF), GLS, GRS and GCS between heart transplant recipients and controls. LV twist dynamics were in normal range in all thirteen HT recipients after one month later from transplantation. However, significant impairment in LV TOR had begun to be identified four months after transplantation. There was no rejection in endomyocardial biopsies except only one of the patients (Grade 2). It is suggested that left ventricular torsion can be used for monitoring changes of left ventricular functions in cardiac allograft.