

## Changes in Left and Right Ventricular Structure and Function of Donor Hearts During the First Year After Heart Transplantation Using Tissue Doppler Imaging, Myocardial Performance Index and Myocyte Size Assessment

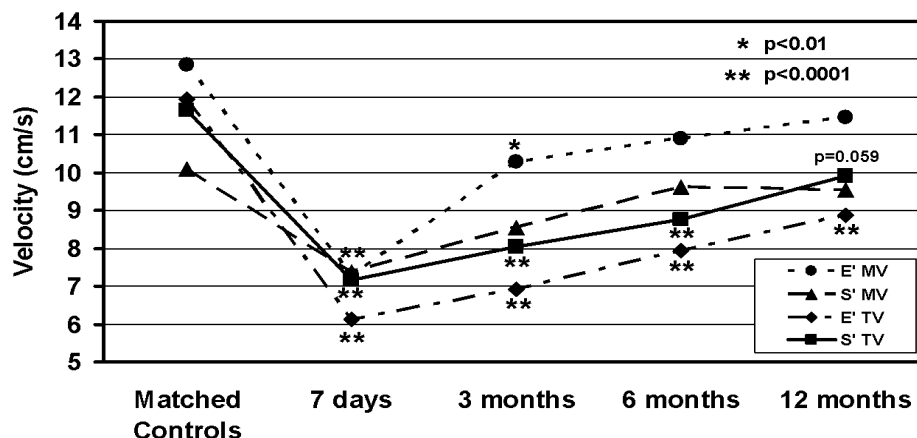
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**Objectives:** Normal changes in Tissue Doppler imaging (TDI) velocities and myocardial performance index (MPI) after heart transplantation (HTx) have not been evaluated. **Aim:** To assess left and right ventricular (LV and RV) structure and function during the 1st year after HTx using TDI and MPI. **Methods:** 20 donors (mean age 35±13, 20 M) had baseline echocardiogram (echo) and 20 recipients (mean age 59±9, 14 M) underwent serial echo including MPI and TDI systolic (S'), early (E') and late (A') diastolic velocities of RV and LV during 1st year post HTx. TDI of RV and LV was not available in all donors and was taken from matched controls.

**Results:** 96 studies (20 donors/controls and 76 recipients) were analyzed. Increase in LV mass occurred at 7 days, most likely due to post-op tissue edema or ischemic changes with normalization at 3 months. An increase in MPI and a decrease in E', S' velocities on TDI occurred at week 1 with gradual improvement within the 1st year (Fig). Normalization of LV and RV MPI occurred at 6 months and LV TDI velocities at 1 year. TDI velocities of RV at 1 year remained lower than in controls. No patient had >grade IA rejection at follow-up. Myocyte size was measured in H&E-stained on biopsies at 7 days and 1 year after HTx. Although changes in myocyte size varied in individual patients, on average no significant change was found (-3%±6%).

**Conclusions:** Impairment of bi-ventricular systolic and diastolic function by TDI and MPI occurs early after HTx with gradual improvement during the 1st year. This study provides for the first time the expected values of TDI velocities and MPI of both LV and RV for HTx recipients without significant rejection during the 1st year after HTx.



p-values for the comparison between velocities of the matched controls to the recipient velocities at each time interval following Heart Transplantation.