




Diastolic function changes of the left and right ventricle after heart transplantation

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Background: A new hemodynamic environment is set up after heart transplantation (HTx).^{1,2} Our aim was to assess changes in diastolic function of the left (LV) and right (RV) ventricle in HTx patients (Pts) during the 1st year and the influence of donor age, graft ischemic time (GIT) and acute right ventricular failure (ARVF).

Patients and Methods: In 55 "healthy" HTx Pts echo was performed 1- and 12 months after HTx. Data on mitral valve (MV) E- (Ew) and A-wave velocity (Aw), MV and tricuspid (TV) E/A ratio, MV and TV E' and A' by tissue Doppler, septal E/E', pulmonary vein diastolic velocity (PVd), systolic pulmonary pressure (sPAP), left atrial indexed volume (LAVI), right atrial pressure (RAP) were collected.

Results: Ew significantly decreases during the 1st year (0.80 vs. 0.73 m/s; p=0.036) as well as E/E' (11.5 vs. 9.1; p=0.009), PVd (0.67 vs. 0.55 m/s; p<0.001) and sPAP (33 vs. 26 mmHg; p<0.001) without concomitant significant change in Aw (p=0.855) and LAVI (p=0.060). TV E/A, TV-E' and TV-A' show no significant change. Pts with significant pulmonary hypertension (PAH) in the 1st month have higher Ew (0.90 vs. 0.75 m/s; p=0.021), E/A (2.2 vs. 1.7; p=0.034) and E/E' (14 vs. 10; p=0.047) but after 1-year only elevated mitral E/A (2.2 vs. 1.6; p=0.014), without change in LAVI (p=0.095). Higher donor age (> mean of 41 years) caused initially lower MV-E' (r=-0.390, p=0.010) and higher sPAP (r=0.285; p=0.045). GIT had no influence on diastolic parameters. ARVF significantly correlated with lower TV-A' acutely and after 1 year (ARVF 5 vs. no-ARVF 8 cm/s; r=-0.600, p= 0.011) and higher RAP (r=0.414, p=0.003).

Conclusion: During the 1st posttransplant year there is improvement in LA diastolic function with better early passive LV filling and reduction in PAH, without change in active filling phase or LA volume. In Pts with significant PAH mean E/E' ratio within 1st month was 14, but after a year in Pts with persistent PAH it declines to only 10, preserving the higher E/A ratio. Higher donor age could impair the early LV ventricular filling with a trend toward more PAH but MV-E' improves with time. ARVF reduces active RV filling (TV-A') throughout the 1st year. GIT does not have influence on diastole.

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LITERATURE

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