P2472

Two-dimensional speckle tracking echocardiography in heart transplant patients: five year follow-up of right and left ventricular function

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Background: Evolution of left and right ventricular (LV and RV) function after heart transplantation (HT) has not been well described. Our objective was to evaluate the normal evolution of echocardiographic parameters of both ventricles and to explore if there is a link between the decrease of strain values and acute rejection (AR) or coronary allograft vasculopathy (CAV)

Methods: We followed 29 HT recipients with serial echocardiograms performed between 2011 and 2018, with a median follow-up of 5 years. LV global longitudinal strain (LV GLS) was analyzed by speckle tracking in 12 LV segments in 4 and 2 chamber views, and RV free wall longitudinal strain (RV free Wall LS) was measured in 4 chamber view. Acute rejection was diagnosed by EMB following our HT protocol. We take into consideration only moderate or severe rejection episodes (grade $\geq$2R).The presence of CAV was studied by coronariography or IVUS one year post-HT.

Results: As shown in the table below, LVEF was preserved from the beginning of the follow up while LV GLS reached the normality in the 6th month, and both remained in normal ranges untill the 5th year. Regarding RV function, TAPSE was impaired in the early post-HT period and increased progressively and reached normality 1 year after HT. RV lateral wall LS rose during follow-up as well, reaching normal values 6 months after HT. Nevertheless, we noticed an impairment in this parameter at 5 years (–20.1±2.7, p=0.001), although it remained within normal ranges compared to guidelines reference parameters. We did not find any correlation between any parameter evaluated and the presence of AR or CAV at five years of follow-up.

Conclusion: As we show in this series of HT recipients with uneventful postoperative course, all LV and RV function parameters showed normal values 1 year after HT and manteined them during long-term follow-up. The presence of AR or CAV did not have any influence in ventricular function.

LV and RV function parameters

	LVEF	LV GLS	TAPSE	FAC	RV free wall LS
Basal (14 days)	63.0±7.9	–17.2±3.6	12.1±2.9*	43.7±9.8	–19.3±4.2
3 months	65.0±8.6	–17.7±2.8	14.8±3.4*	45.3±8.2	–22.0±4.6
6 months	65.8±9.6	–18.7±3.4	16.1±3.6	44.6±9.6	–24.6±4.9*
1 year	63.5±8.1	–18.1±2.2	17.1±4.1	44.0±8.1	–26.7±7.1*
2 years	63.8±6.8	–18.3±9.0	19.4±3.7	45.3±7.9	–27.6±6.3*
5 years	64.4±7.3	–18.1±3.3	17.9±3.9	46.6±12.1	–20.1±2.8
P (Anova)	0.85	0.85	<0.001	0.82	<0.001