Diastolic Dysfunction Resolves After Lung Transplant in Recipients with Pre-transplant Pulmonary Hypertension

Objective: Pulmonary hypertension (PH) can cause left ventricular diastolic dysfunction (DD) through ventricular interdependence. DD has been linked with adverse outcomes after lung transplant (LTx). The impact of LTx on DD in recipients with pre-transplant PH is not defined. In this cohort, we aimed to assess the prevalence of DD and the impact of LTx on DD.

Methods: In large single center database from January 2011-September 2021, single or bilateral LTx recipients with PH (mean pulmonary artery pressure (mPAP)>20mmHg) were retrospectively identified. Those without pre-transplant or post-transplant echocardiogram within 1 year after transplant were excluded. DD was diagnosed and graded according to the American Society of Echocardiography 2016 guideline on assessment of DD (present, absent, indeterminate). McNemar's test was used to examine association between DD pre- and post-transplant in the patients with classifiable diastolic function at both timepoints. For those with DD pre-transplant, we compared those who did and not have dysfunction post-transplant.

Results: Of 476 primary LTx recipients, 205 with PH formed the study cohort (mean age 56.6 +/- 11.9, men 61.5%, mPAP 30.5 +/- 9.8 mmHg, LVEF < 55% 9 (4.3%). DD was present pre-transplant in 116 (56.6%) (Grade I=11, II=104, III=1), absent in 12 (5.9%), indeterminate in 73 (35.6%), and 4 (1.9%) had missing data. Post-transplant, DD was present in 17 (8.3%) (Grade I=6, II=8, III=3), absent in 139 (67.8%), indeterminate in 18 (8.8%), and 31 (15.1%) had missing data. For those with scores in both time periods, there was a significant decrease in DD post-transplant (McNemar's test p<0.001). Comparing LTx recipients with resolved DD post-transplant with those with persistent DD post-transplant, there were no differences in age, BMI, primary diagnosis, diabetes, or pre-transplant mPAP (30.22 +/- 9.38 mmHg v. 31.46 +/- 7.93 mmHg, p=0.654).

Conclusion: DD is highly prevalent in LTx candidates with PH and resolves in most patients after LTx regardless of patient characteristics. This finding suggests that the effects of PH on diastolic function in LTx recipients are often reversible, and as such DD and the associated clinical syndrome of heart failure with preserved ejection fraction should not be considered a relative contraindication to LTx. Future studies should address which phenotypes of DD are likely to improve after LTx, and compare clinical outcomes in those with resolved or persistent DD.

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Additional Resources

- https://files.aievolution.com/prd/aat2101/abstracts/abs_5198/Table1DresolvesafterLTx.docx