Methods: We performed a retrospective cohort study of patients in the Lung Transplant Outcomes Group who received a bilateral lung transplant at our institution between 2004-2012 for idiopathic pulmonary fibrosis (IPF), chronic obstructive pulmonary disease (COPD), or pulmonary arterial hypertension (PAH). Patients with LV ejection fraction <50%, sarcoidosis, cystic fibrosis, or previous lung transplant were excluded. Transthoracic echocardiograms performed during evaluation for transplant listing were analyzed by trained sonographers, blinded to other clinical information. PFD was defined as grade 3 PFD (PaO2/FIO2 ≤ 200 with allograft infiltrates) at 48 or 72 hours after reperfusion. The association between E/e' and PFD was assessed with multivariable logistic regression.

Results: Eighty-seven of 107 patients had interpretable E/e' ratios (mean 6.7 ± 2.5). The median age was 57 [IQR 51, 60] years and 33 (38%) were female. Thirty-eight (44%) had COPD, 33 (38%) had IPF, and 6 (7%) had PAH. In unadjusted analysis, worsening diastolic function was associated with an increased odds of PFD (OR per one SD increase in E/e' 1.76, 95% CI 1.11, 2.77, p = 0.01). After adjusting for recipient age, BMI, and other clinical information, PGD was significantly associated with increased odds of PFD (OR per one SD increase in E/e' 2.06, 95% CI 1.11, 3.80, p = 0.02).

Conclusion: LV diastolic dysfunction is independently associated with PFD. We postulate that the chronically unloaded LV in the setting of advanced lung disease, worsening of LV relaxation due to a perioperative proinflammatory state, and acute volume loading during transplantation may result in higher left-sided filling pressures and pulmonary edema that may contribute to PGD.

16 Outcomes of High Emergency for More Than 1000 Lung Transplant Recipients Results of the Cohort of Lung Transplantation (COLT) Study

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Purpose: Lung transplantation (LT) is considered as a therapeutic option for patients with end-stage respiratory failure. COLT is a prospective cohort set up in order to identify predictive biological markers of chronic lung allograft rejection (CLAD), the main complication of LT. The continuing significant number of patients who die while on a waiting list for lung transplantation for PGD (OR per one SD increase in E/e' 2.06, 95% CI 1.11, 3.80, p = 0.02).

Conclusion: LV diastolic dysfunction is independently associated with PFD. We postulate that the chronically unloaded LV in the setting of advanced lung disease, worsening of LV relaxation due to a perioperative proinflammatory state, and acute volume loading during transplantation may result in higher left-sided filling pressures and pulmonary edema that may contribute to PGD.

17 Frailty Is Associated With Pre-Operative Delisting and Death in Lung Transplant Candidates

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Purpose: Frailty is associated with morbidity and mortality in other solid organ transplant populations. It is under-examined in lung transplant, however. We measured frailty prevalence, construct validity, and association with delisting or death before transplant in candidates for lung transplant.

Methods: We performed a preliminary analysis of lung transplant candidates from four U.S. centers enrolled in the Lung Transplant Body Composition prospective cohort study. Frailty was assessed by the Fried Frailty Index (FFI; range 0-5, higher score denotes poorer functioning) as well as the Short Physical Performance Battery (SPPB; range 0-12, lower score denotes poorer functioning). Because sarcopenia (low muscle mass) may underpin the frailty phenotype, we measured muscle mass by whole-body DEXA and calculated the appendicular skeletal muscle index (ASMI) in a subset of subjects. We evaluated construct validity by testing correlations between frailty measures and ASMI, forced vital capacity % predicted (FVC %), body mass index (BMI), age, six minute walk distance (6MWPD), and Lung Allocation Score (LAS). To evaluate predictive validity, we determined the association between frailty measures and delisting or death on the waitlist with logistic regression.

Results: By FFI, 38% were frail (n = 133/351) and 12% by SPPB (n = 25/208). The strength and direction of correlations between the FFI and SPPB and other measures were as hypothesized. Worse frailty scores correlated with lower ASMI (FFI: -0.35; SPPB 0.18), lower 6MWPD (FFI: -0.26; SPPB: 0.36), and higher LAS (FFI: 0.32; SPPB: -0.54) (all p < 0.05), but not with age, BMI, or FVC %. In unadjusted analyses, each 1-point worsening in the FFI or SPPB was associated with ~1/3-increased odds of delisting or death before transplant (FFI: OR 1.37, 95% CI: 1.07-1.77; SPPB: OR 1.32, 95% CI: 1.13-1.55). After adjusting for age, gender, FVC %, BMI, creatinine, LAS, and center, the SPPB, but not FFI, remained significant (OR: 1.38, 95% CI: 1.02-1.88).

Conclusion: The FFI and SPPB exhibit reasonable construct validity as frailty measures in lung transplant candidates. Frail patients appear to be at increased risk of delisting or death prior to transplant. Further work will examine the relationship between pre-operative frailty and mortality after transplant. Refinement of the frailty construct may improve its prognostic utility in this population.

18 Association of Thoracic Muscle Cross-Sectional Area and Clinical Outcomes in Lung Transplant Candidates

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Purpose: Approximately two-thirds of lung transplant (LTX) candidates have reduced skeletal muscle mass, however its clinical significance remains undefined. The objective of this study was to assess the association of thoracic muscle cross-sectional area (CSA) from computed tomography (CT) with six minute walk distance (6MWPD), quadriceps training volumes, health related quality of life (HRQL), and hospital length of stay.

Methods: Thoracic CT scans were analyzed from 169 LTX candidates who had available pulmonary rehabilitation data and HRQL (Short-Form 36) at the time of transplant listing (2004-2009), and survived to transplantation. Thoracic skeletal muscle CSA (pectoralis, intercostal and paraspinal muscles) was quantified using a single slice at the carina utilizing the density range that the new Lung Transplantation allocation rules implemented in France since 2007 (HELT) allows a rapid organ procurement for patients at imminent risk of death, and is feasible with an acceptable survival (74% at 1 year).