High Body Mass Index is a Risk Factor for Acute **Cellular Rejection in Lung Transplant Recipients** Join the future of health.

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• Obesity, as measured by increased body mass index (BMI), is associated with increased risk of acute cellular rejection (ACR) in renal and cardiac transplant recipients.

Initial BMI was a significant predictor of ACR by 1 year (p<0.048) and performed better than BMI at time of LTx. There seemed to be a strong association between BMI at initial consult and ACR risk during the first year

Relative to patients with BMI≥35, patients with BMI <25 (OR 0.07, 95% CI 0.01-0.38), BMI 25-29.9 (OR 0.06, 95% CI 0.01-0.33), and BMI 30-34.9 (OR 0.11, 95% CI 0.02-0.60) were less likely



- Despite advances in immunosuppressive therapies, ACR continues to occur in more than a third of recipients in the first year post lung transplant (LTx) and has shown to be a predictor of chronic lung allograft dysfunction and post LTx survival.
- Although there is data on the association between primary graft dysfunction and obesity in LTx, the effect of BMI on the incidence of ACR has not been examined.

after LTx (Figure 1).

Figure 1. ACR risk during the first year post-LTx and initial consult BMI (kg/m²) ROC Curve for Model Area Under the Curve = 0.7601



to experience ACR, even after adjusting for gender, age and LTx laterality (Figure 3 and Figure 4).

Figure 3. ACR risk during the first year post-LTx stratified by initial BMI, unadjusted



Methodology

 Medical records of 213 consecutive LTx recipients performed at our institution between 2001 and 2016 were reviewed.

- Patients were stratified into 4 groups based on BMI (kg/m²) at initial consult (<25, 25-29.9, 30-34.9, ≥35) and further classified in 2 groups based on presence or absence of ACR during the first year.
- ACR was diagnosed either by biopsy or clinically.
- Logistic regression was utilized to assess the relationship of BMI at initial consult ACR adjusted for confounding and variables (i.e. age, gender, diagnosis, LTx laterality (bilateral vs single), Forced Vital Capacity (FVC)% at listing and Lung Allocation Score (LAS)).

• The study was approved by the Inova IRB

Results





Figure 4. ACR risk during the first year post-LTx stratified by initial BMI, adjusted



Figure 2. ACR risk at one year post-LTx stratified by initial BMI (kg/m²)



- The demographics of our cohort included age 54.2 \pm 11.6 years, BMI 27.1 \pm 4.9 kg/m², male gender 55.9%, single LTx recipients 67.1%.
- Primary diagnosis included Chronic Obstructive Pulmonary Disease (44.1%), Idiopathic Pulmonary Fibrosis (39.9%), non-IPF Interstitial Lung Disease (7.0%), Cystic Fibrosis (3.8%) and other (5.2%).
- Seventy-two (35.2%) had BMI<25, 84 (39.4%) BMI 25-29.9, 43 (20.2%) BMI 30-34.9, and 11 (5%) BMI ≥35.
- Seventy-nine (37.1%) patients had at least 1 episode of ACR during the first year post LTx.

- Regardless of subsequent weight loss prior to listing for Lung Transplantation, patients with BMI≥35 at initial consult retained an increased risk of ACR in the first year post LTx.
- Obesity appears to be only a partially modifiable recipient-related risk factor for increased immune reactivity in LTx patients and warrants further study.