



News Release

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FOR MORE INFORMATION, CONTACT:

Nathaniel Dunford or Rory Williams

ndunford@thoracic.org or rwilliams@thoracic.org

ATS Office 212-315-8620 or 212-315-8631 (until May 12)

Session A36: With a Little Help From My Friends: All About Lung Transplant

Sunday, May 17, 2015, 9:30 a.m. – 4:15 p.m.

Location: Colorado Convention Center

Shorter Stature Appears to Lead to Higher Mortality Rates, Longer Waiting Times for Lung Transplantation

ATS 2015, DENVER—Lung transplant candidates who are about 5'3" or shorter have longer waiting times than taller candidates and are more likely to die within a year while waiting for a lung transplant, according to a study presented at the 2015 American Thoracic Society International Conference.

Shorter adults are also more likely to be placed on mechanical ventilation while they wait for lung transplantation, said lead author Jessica Sell, MPH, of the Columbia University Medical Center in New York.

The researchers retrospectively reviewed information from 13,341 adults initially listed for lung transplantation in the U.S. from 2010 and 2011. The data were provided by the Organ Procurement and Transplant Network/United Network for Organ Sharing. Baseline characteristics and 1-year waiting list mortality and transplant rates by height quartile were analyzed. The study was designed to adjust for other variables that could affect the results, such as age, sex, race, diagnosis, and ventilation or extracorporeal membrane oxygenation at listing.

A height of less than 162 cm (about 5'3") was associated with a 60% relative increase in the 1-year mortality rate, a 34% relative decrease in the 1-year transplant rate, and a 39% relative increase in the 1-year respiratory failure rate compared with those of average height (170 to 176.5 cm), according to Sell and fellow researchers.

“Access to lung transplantation for shorter lung transplant candidates could be improved by reformulating the LAS [Lung Allocation Score] calculation to provide greater transplant priority for this disadvantaged group,” Sell said.

Although there is anecdotal evidence that suggests shorter adults wait longer for lung transplantation, this is the first study to the researchers’ knowledge of an analysis that focuses on the impact of short stature on waiting time and waiting list mortality.

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** Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 63972

Short Stature and Access to Lung Transplantation in the United States

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Scientific Abstract

Category:

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Authors:

J. Sell, S.M. Arcasoy, L. Shah, H. Robbins, K. Raza, M. Bacchetta, H. Park, P. Heffernan, F. D'Ovidio, D.J. Lederer; Columbia University Medical Center - New York, NY/US

Abstract Body

INTRODUCTION

Although there is anecdotal experience suggesting that shorter adults wait longer for lung transplantation, the impact of short stature on waiting time and waiting list mortality has not been previously examined to our knowledge.

METHODS

We performed a retrospective cohort study of 4,761 adults initially listed for lung transplantation in the United States in 2010 and 2011 using data provided by OPTN/UNOS. Baseline characteristics and 1-year mortality and transplant rates were examined by height quartile. Semi-proportional competing risks models were used to examine the hazard rate of each waiting list outcome (transplantation, death without transplantation, and removal from the waiting list) adjusting for potential confounders and precision variables, including age, gender, race, diagnosis, ventilation or ECMO at listing, initial oxygen requirement, blood type, LAS at listing, BMI at listing, region, lung preference and prospective HLA cross-match requirement. A Cox proportional hazards model was used to examine the hazard rate of mechanical ventilation while awaiting transplant by height quartile adjusting for the aforementioned covariates.

RESULTS

The median height was 170 cm (interquartile range 161 to 178 cm), with a median BMI of 25.4 (IQR 21.5-28.9), LAS of 36.8 (IQR 33.2-44.2), and age of 58 years (IQR 48-64). The majority was white (83%), male (55%), had interstitial lung disease (53%) and was listed for double lung transplantation only (57%). Eight percent required a prospective HLA antibody cross-match. After adjusting for covariates, height < 161cm was associated with a 71% relative increase in the 1-year mortality rate, a 40% relative decrease in the 1-year transplant rate, and a 62% relative increase in the 1-year respiratory failure rate compared to those of average height (170-178 cm). However, the increased respiratory failure rate was not found to be statistically significant at the 0.05 alpha level. There was an increasing trend in 1-year mortality ($p<0.001$) and respiratory failure ($p<0.001$), and a decreasing trend in transplantation ($p=0.002$) across height quartiles.

CONCLUSIONS:

Shorter lung transplant candidates have longer waiting times, are more likely to be placed on mechanical ventilation while awaiting lung transplantation, and have a higher waiting-list mortality rate than taller candidates even after controlling for factors linked to waiting time, such as LAS, ABO blood group, double lung preference, and need for a prospective cross-match. Access to lung transplantation for shorter lung transplant candidates could be improved by reformulating the LAS calculation to provide greater transplant priority for this disadvantaged group.

	Height Quartiles (cm)				
	Quartile 1 (≤ 161)	Quartile 2 (> 161 & ≤ 170)	Quartile 3 (> 170 & < 178)	Quartile 4 (≥ 178)	p for trend
Height, cm, median (IQR)	157 (144-160)	165 (162-168)	174 (173-176)	183 (180-185)	
No.	1196	1216	1459	880	
No. of Decedents	96	86	90	46	
Unadjusted Mortality Rate per 100 person-years	15.8 (12.9-19.3)	16.7 (13.5-20.1)	18.5 (15.0-22.7)	17.9 (13.5-24.0)	
Mortality rate, HR (95% CI)					
Unadjusted	1.30 (0.98-1.74)	1.16 (0.86-1.56)	1	0.85 (0.60-1.21)	< 0.001
Fully Adjusted	1.71 (1.09-2.67)	1.23 (0.84-1.81)	1	0.79 (0.53-1.18)	<0.001
No. Transplanted	581	730	1049	671	
Unadjusted Transplant Rate per 100 person-years	95.6 (88.1-103.7)	141.5 (131.6-152.1)	215.6 (203.0-229.1)	262.3 (243.2-282.9)	
Transplant rate, HR (95% CI)					
Unadjusted	0.52 (0.47-0.57)	0.71 (0.65-0.78)	1	1.12 (1.02-1.24)	<0.001
Fully Adjusted	0.60 (0.53-0.70)	0.83 (0.74-0.93)	1	1.08 (0.97-1.20)	0.002
No. Respiratory failure	137	127	117	69	
Unadjusted rate of respiratory failure per 100 person-years	15.4 (12.60-18.9)	14.9 (11.9-18.7)	15.1 (12.0-19.0)	12.7 (0.9-18.0)	
Rate of respiratory failure, HR (95% CI)					
Unadjusted	1.27 (0.93-1.72)	1.13 (0.82-1.56)	1	0.78 (0.52-1.18)	< 0.001
Fully Adjusted	1.62 (0.96-2.71)	1.25 (0.83-1.89)	1	0.70 (0.43-1.14)	< 0.001