

Background. Lung transplant patients (LTPs) experience considerable infection-related morbidity and mortality, including from pneumonia. Our institution performs the highest volume of lung transplants in the US, providing an opportunity to describe the scope and impact of pneumonia in LTPs.

Methods. We conducted a retrospective cohort study of all patients who received a lung transplant at our institution from late 2017 to early 2020. Patient records were reviewed from the pre-transplant period to 1-year after transplant for data pertinent to comorbidities, transplantation characteristics and complications, donor organ cultures, immunosuppression, prophylactic and therapeutic antibiotic regimens, pathogens, and outcomes. Cases of pneumonia were reviewed using standard criteria. The primary outcome was 1-year survival.

Results. 320 patients received lung transplants and 121(38%) developed pneumonia. Characteristics are in Table 1.

Pneumonia developed a median of 66 days after transplant (IQR 15-142). Most frequent pathogens (>10 cases) were *P. aeruginosa*, *S. aureus*, and *K. pneumoniae*. The most common viral cause was RSV (5 cases). Patients with pneumonia had significantly lower 1-year survival rates than those without (100/120, 83.3% vs 186/199, 93.5%; p=0.004). Number of readmissions were higher in patients who had pneumonia (mean 3 ± 2.58 vs 2.04 ± 3.18, p< 0.001). Bronchial stents (p< 0.001), past medical history of atrial fibrillation (0.003), and donor lung culture positive for *E. coli* (0.007) were independent risk factors for the development of pneumonia. Prophylaxis with piperacillin/tazobactam (0.032) prophylaxis with ciprofloxacin (0.008) were protective.

Table 1. Patient characteristics

Characteristic	Pneumonia (N=121)	No Pneumonia (N=199)	P-Value
Age (years), mean ± SD	63.79 ± 9.2	65.43 ± 7.89	0.188
Male sex (%)	81 (66.9)	132 (66.3)	0.911
Charlson comorbidity index, mean ± SD	4.78 ± 2	4.77 ± 1.96	0.928
Transplant type (%)			
Left lung	38 (31.4)	85 (42.7)	0.044
Right lung	54 (44.6)	76 (38.2)	0.256
Double lung	29 (24)	38 (19.1)	0.299
Comorbidities			
Asthma	14 (11.6)	18 (9)	0.465
COPD	57 (47.1)	95 (47.7)	0.913
Obesity	27 (22.3)	37 (18.6)	0.420
Diabetes	43 (35.5)	53 (26.6)	0.092
Interstitial lung disease	43 (35.5)	51 (25.6)	0.059
Idiopathic pulmonary fibrosis	64 (52.9)	106 (53.3)	0.948
Cystic fibrosis	3 (2.5)	0 (0)	0.053
Pulmonary hypertension	33 (27.3)	46 (23.1)	0.403
Atrial fibrillation	22 (18.2)	14 (7)	0.002
Donor cultures			
Total positive	94 (78.3)	154 (78.2)	0.973
<i>S. aureus</i>	62 (51.2)	92 (46.2)	0.385
<i>Candida</i> species	28 (23.1)	49 (24.6)	0.764
<i>E. coli</i>	14 (11.6)	9 (4.5)	0.018
<i>Enterococcus</i> species	2 (1.7)	2 (1)	0.635
<i>Klebsiella</i> species	7 (5.8)	12 (6)	0.928
<i>P. aeruginosa</i>	7 (5.8)	14 (7)	0.661
<i>S. maltophilia</i>	5 (4.1)	7 (3.5)	0.770
Antibiotic pre-operative prophylaxis			
Vancomycin	109 (90.1)	188 (94.5)	0.140
Piperacillin-tazobactam	79 (65.3)	153 (76.9)	0.024
Cefazolin	25 (21)	44 (22.2)	0.800
Ciprofloxacin	10 (8.3)	28 (14.1)	0.120
Cefepime	19 (15.7)	31 (15.6)	0.976
Meropenem	9 (7.4)	12 (6)	0.622
Ceftriaxone	12 (11.1)	6 (3.2)	0.007
Levofloxacin	6 (5.6)	8 (4.3)	0.626
Antibiotic prophylaxis duration, mean ± SD	7.49 ± 4.1	7.17 ± 3.34	0.025

Conclusion. Pneumonia occurred within the first year of transplant in 38% of LTPs and was associated with lower survival.

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2117. Outcomes and Risk Factors Associated with Development of Pneumonia in Lung Transplant Recipients in the Year After Transplant

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