

Background

- Standard practice is to administer prophylactic antibiotics post-lung transplant (LT)
- Emory University Hospital's (EUH) empiric regimen includes ceftazidime and vancomycin
- No studies have evaluated the impact of culture positivity and the appropriateness of the empiric antibiotics
- Purpose: evaluate early post-transplant outcomes of culture positive appropriate empiric regimens, culture positive inappropriate empiric regimens, and culture negative LT recipients.

Methods

- Study Design: Retrospective cohort review
- Inclusion:
 - Adult LT recipients between 1/1/10 – 8/31/15
- Exclusion:
 - Patients with cystic fibrosis
 - Patients with a prior LT
- Cohorts:
 - Appropriate culture positive
 - Inappropriate culture positive
 - Culture negative
- Objectives:
 - Primary: 30 day mortality
 - Secondary:
 - Hospital length of stay (LOS)
 - Intensive care unit (ICU) LOS
 - Percent neutrophil count in a bronchoalveolar lavage (BAL)
 - Presence of airway ischemia
 - Appropriateness of the empiric antibiotic regimen

Results

Table 1. Primary and Secondary Outcomes*

	Appropriate Culture (+) (n=113)	Inappropriate Culture (+) (n=5)	Culture (-) (n=29)
30 day mortality, n (%)	9 (8)	0 (0)	4 (14)
Hospital LOS (days), mean	26	30	23
ICU LOS (days), mean	12	12	11
Percent neutrophil count in the BAL, mean	64.4	36.4	59.7
Presence of airway ischemia, n (%)	8 (7)	0 (0)	0 (0)

*No findings were statistically significant

Table 2. Donor Culture Antibiogram

Organism	ampicillin	ampicillin-sulbactam	aztreonam	cefepime	cefoxitin	ceftazidime	ceftioxaone	ciprofloxacin	gentamicin	levofloxacin	meropenem	oxacillin	penicillin	piperacillin-tazobactam	tobramycin	SMX-TMP	vancomycin
Gram positive organisms																	
Coagulase negative <i>Staphylococcus aureus</i> (n=1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Corynebacterium pseudodiphtheriticum</i> (n=1)	-	-	-	-	-	-	-	-	100	-	-	-	100	-	-	-	100
<i>Staphylococcus aureus</i> (n=40)	0	67	-	-	0	-	80	100	100	82	-	81	22	-	-	97	100
Gram negative organisms																	
<i>Acinetobacter</i> species (n=1)	-	100	-	100	-	0	100	100	100	100	100	-	-	100	100	100	-
<i>Enterobacter</i> species (n=7)	0	0	100	100	20	100	100	100	100	100	100	-	-	100	100	100	-
<i>Escherichia coli</i> (n=2)	0	0	100	100	100	100	100	-	100	100	-	-	-	100	100	100	-
<i>Haemophilus influenzae</i> (n=3)	100	-	-	-	-	-	100	-	-	-	-	-	100	-	-	0	-
<i>Proteus mirabilis</i> (n=1)	100	100	-	100	-	100	100	-	100	100	-	-	-	-	-	100	-

Table 3. Recipient Culture Antibiogram

Organism	amikacin	ampicillin	ampicillin-sulbactam	aztreonam	cefazolin	cefepime	cefoxitin	ceftazidime	ceftioxaone	ciprofloxacin	clindamycin	gentamicin	levofloxacin	linezolid	meropenem	oxacillin	piperacillin-tazobactam	tobramycin	SMX-TMP	vancomycin
Gram positive organisms																				
<i>Enterococcus</i> species (n=3)	-	67	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	67
<i>Staphylococcus aureus</i> (n=61)	-	-	-	-	64	-	-	-	-	100	85	100	100	100	-	74	-	-	100	100
Gram negative organisms																				
<i>Acinetobacter</i> species (n=7)	0	-	0	-	-	57	-	71	-	0	-	100	86	-	86	-	-	100	100	-
<i>Enterobacter</i> species (n=9)	100	0	0	89	0	100	0	100	78	100	-	100	100	-	100	-	100	100	100	-
<i>Escherichia coli</i> (n=2)	100	50	50	100	100	100	100	100	100	100	-	100	100	-	100	-	100	100	50	-
<i>Klebsiella pneumoniae</i> (n=6)	100	0	80	80	80	80	80	80	80	-	-	100	100	-	100	-	80	100	100	-
<i>Pseudomonas aeruginosa</i> (n=12)	91	-	-	100	-	91	-	100	-	67	-	73	64	-	100	-	100	82	17	-
<i>Stenotrophomonas maltophilia</i> (n=2)	-	-	-	-	-	-	-	0	-	-	-	-	100	-	-	-	-	-	100	-

Results Continued

Table 4. Donor Demographics*

	Appropriate Culture (+) (n = 113)	Inappropriate Culture (+) (n = 5)	Culture (-) (n = 29)
Age (years), mean ± SD	31.2 ± 12.6	24.5 ± 14.2	35.2 ± 12.5
Female, n (%)	41/104 (39)	2/4 (50)	9/20 (45)
Weight (kg), mean ± SD	74.6 ± 14.0	60.6 ± 10.3	78.5 ± 14.2
Total Ischemic Time (min), mean ± SD	336.3 ± 287.0	325.6 ± 85.2	324.2 ± 69.1

*No findings were statistically significant

Table 5. Recipient Demographics*

	Appropriate Culture (+) (n = 113)	Inappropriate Culture (+) (n = 5)	Culture (-) (n = 29)
Age (years), mean ± SD	57.4 ± 10.1	52.0 ± 18.7	59.2 ± 8.5
Female, n (%)	38 (33)	1 (20)	12 (41)
Weight (kg), mean ± SD	78.4 ± 16.0	78.2 ± 22.2	77.8 ± 14.7
Laterality, n (%)			
Left	13 (11)	0 (0)	6 (21)
Right	21 (18)	1 (20)	4 (14)
Both	81 (70)	4 (80)	19 (66)
Lung Allocation Score, mean ± SD	42.3 ± 10.5	47.8 ± 25.5	40.7 ± 8.7

*No findings were statistically significant

Conclusions

- There does not appear to be an association between antibiotic appropriateness and 30 day mortality, hospital LOS, or ICU LOS
- Future directions of research should therefore evaluate:
 - Long term outcomes and emergence of resistance
 - Impact of colonization

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