

Epidemiology of Invasive *Mycoplasma* and *Ureaplasma* Infections Early after Lung Transplantation

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Background

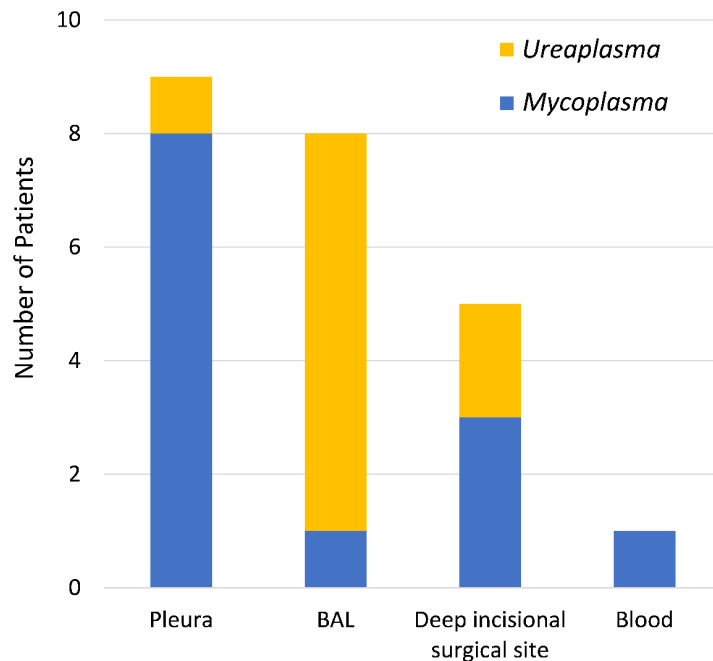
- *Mycoplasma hominis* and *Ureaplasma* species can cause invasive infections early after lung transplantation
 - Difficult to diagnose and treat
 - Associated with substantial morbidity, including **hyperammonemia syndrome**
- Data on the epidemiology and clinical outcomes of these infections are needed
 - Expedite diagnosis and improve clinical management
 - Inform donor and recipient screening

Methods

- Retrospective analysis
- Case definition
 - Lung transplantation at our hospital from **1/2010 – 4/2019**
 - Post-transplant positive culture or PCR study for *M. hominis* or *Ureaplasma* spp.
 - Patients with positive urogenital studies alone were excluded
- We analyzed donor and recipient characteristics, treatment courses, and outcomes
- Follow-up period:
up to **2 years** after transplant

Results

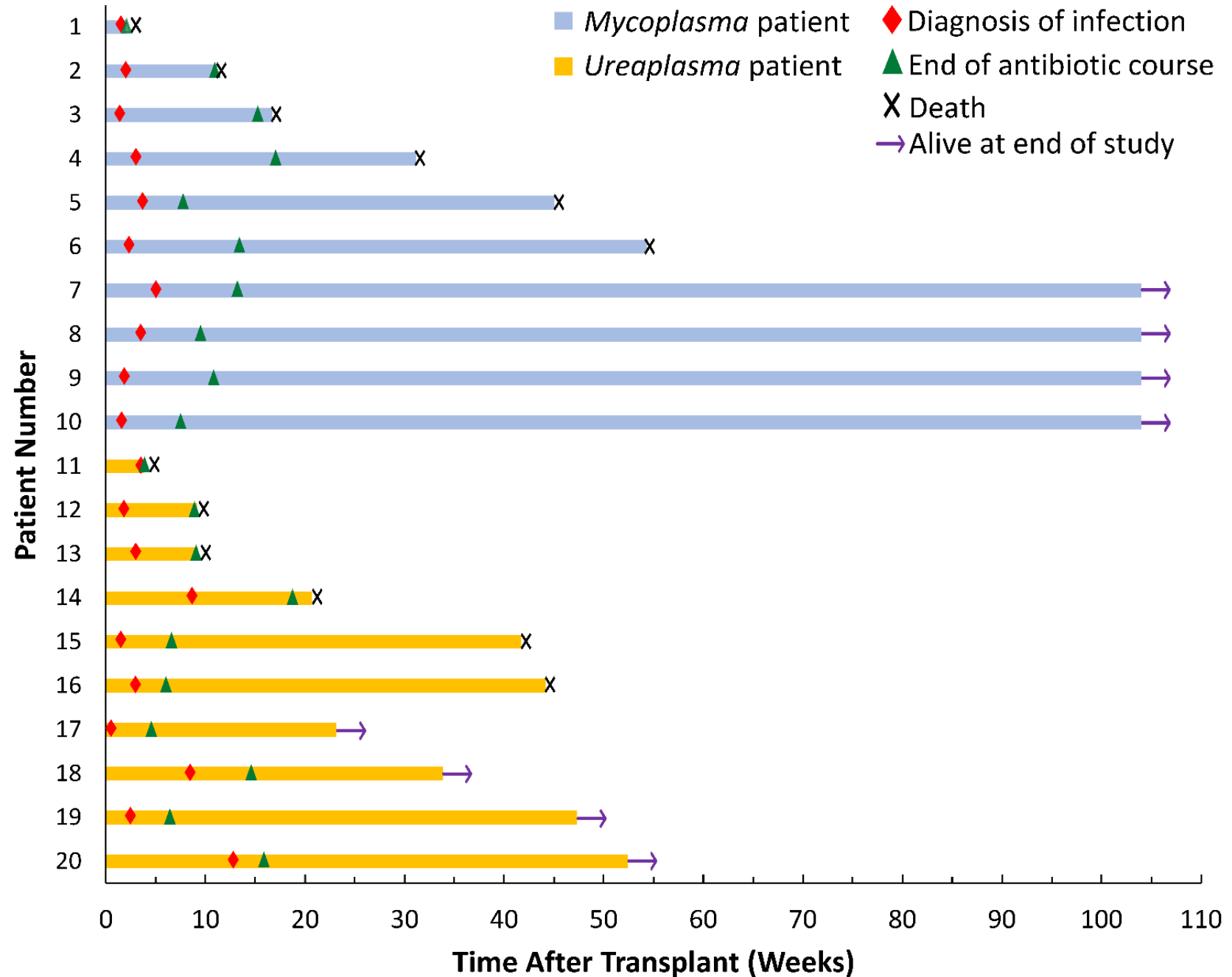
- 20 of 1055 (**1.9%**) lung transplant recipients developed invasive infection from ***M. hominis* (n=10) or *Ureaplasma* spp. (n=10)**
- Median time from transplant to date of positive microbiology study: **19 days** (range, 4-90 days)
- 13 (65%) patients developed **invasive infection outside of the respiratory tract**



- 8 (40%) patients developed altered mental status and elevated serum ammonia levels, consistent with **hyperammonemia syndrome**
 - 5 patients with *Ureaplasma* spp.
 - 3 patients with *M. hominis*
- Median duration of therapy: **6 weeks** (IQR, 4-9w)
- 18 (90%) patients received **two-drug antimicrobial therapy**, typically including doxycycline, fluoroquinolones, and/or azithromycin
- Donor Characteristics:**
 - 15 (75%) donors were **male**
 - Median donor age: **31 years** (range, 18-45 years)
 - 16 (80%) donors had **chest imaging consistent with aspiration**

Outcomes

- **11 patients (55%) died within 1 year after transplant**
(median death, 117 days after transplant; IQR, 65-255 days)
- **7 (64%) of 11 deaths** were deemed at least partially attributable to *Mycoplasma* or *Ureaplasma* infection
- Additional infectious and non-infectious complications were common
 - **17 (85%) patients** developed concurrent infections caused by other pathogens.



Conclusions

- Both *M. hominis* and *Ureaplasma* spp. infections occurred early after lung transplant, had extraparenchymal involvement, and were associated with substantial morbidity and mortality, including hyperammonemia syndrome.
- Transplant clinicians should have low thresholds for performing specific diagnostic testing for these organisms with specialized culture media or PCR.
- Protocols for donor and recipient screening and management need to be developed.
 - Should donors undergo respiratory screening for *M. hominis* or *Ureaplasma* spp?
 - If donor screening is performed, should all donors or only selected donors at increased risk be screened?
 - Should asymptomatic lung transplant recipients be screened for *M. hominis* or *Ureaplasma* spp. colonization early after transplantation (i.e., post-operative BAL testing)?
 - How should lung transplant recipients with colonization or infection from these organisms be managed?

