What We Can Do Now: Case Study in Donor Lung Management

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Disclosure

None
Learning Objectives

• Common problems in lung donor management
• Address impact of donor sequence on organ quality
• Discuss strategies to improve donor lung quality and utilization
Recipient

- 69-year-old woman with familial pulmonary fibrosis
- Listed for 63 days
- LAS 44.8
- Declining functional status over last 6 weeks
Donor

• 54-year-old woman with cardiac arrest at home
• Sequence 94 (Zone C)
• 13-year history of congestive heart failure
• BMI 45
• 7.37/34/225 on Volume Control with Vt 500 and PEEP 5

• ECHO
  – Severely increased left ventricular size with ejection fraction 10-15%
Ideal Donor Criteria

**Donor**
- Age < 55 years old
- Smoking history < 20 pack-years
- No significant past medical history
- Absence of chest trauma
- ABO compatibility

**Organ**
- No active pulmonary infection
- P/F ratio > 300 mmHg on 100% FiO\textsubscript{2} and PEEP 5 cmH\textsubscript{2}O
- Appropriate size
- Clear chest X-ray
- No purulent secretions on bronchoscopy
Refusals and Utilization

• 57 v. 40% likelihood of lung utilization with 0 v. 10 refusals for donor quality
  – Likelihood 14% with P/F < 300 mmHg

• Modifiable factors associated
  – Abnormal chest X-ray
  – Abnormal bronchoscopy
  – P/F < 300 mmHg

Singh E et al. JHLT 2019
Association with Outcomes

Axtell AL et al. Journal of Cardiac Surgery 2020
Association with Outcomes

• 10-fold increase in sequence number associated with 0.8% absolute decline in 5-year survival

Donor History

- Congestive heart failure
- Question your own concerns
  - Additional data?
- Right Heart Catheterization
  - RA 18
  - PA 34
  - PCW 23
Lung Function

- Lung Protective Ventilation
- Prone Positioning
- Donor Management Protocol
Ventilatory Strategies

- 6-8 mL/kg or predicted body weight
- Moderate PEEP
- Intermittent recruitment*

- Increased P/F ratio (396 v. 332)
- Increased utilization (54 v. 27%)
- Attenuated increase in inflammation

Mascia L et al. *JAMA* 2010
Prone Positioning

Mendez MA et al. Crit Care Med 2019
Donor Management Protocol

- Ventilator management
- Fluid management
- Adjunctive therapies
  - Steroids
  - Antibiotics
  - Antiinflammatory agents*

Miñambres E et al. JHLT 2015
Approach

• Protocolized administration of therapies
• Prone positioning
• Aggressive diuresis
• *Time and Teamwork*

Mendez MA et al. *Crit Care Med* 2019
Outcome

- Procurement
  - 39 hours after initial match run
  - 32 hours after primary offer
- CVP 8
- 7.42/36/527
Conclusions

• Donor sequence number should not be considered when assessing organ quality
• Work with OPO on diagnostics and interventions that may result in increased utilization
• Interventions such as lung-protective ventilation, prone positioning, and donor management protocols have increased utilization