

Preoperative and Postoperative Management of Lung Transplantation Patient

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1. Management of Donor

1-1 Selection of donor

- (a) Age <55
 - (b) Normal chest x-ray just before harvest should be checked every 8 hrs chest x-ray less than 2 hrs old should be available at time of procurement minimal abnormality never should be regarded as non-significant
 - (c) PaO₂ >300mmHg on FiO₂=1.0, PEEP=5 cmH₂O should be checked at 6-8 hr interval following trends is important
 - (d) Normal bronchoscopic exam immediately prior to explant check for purulent secretion or foreign body blood in the airways: suspicion of associated pneumonitis
 - (e) Absence of infected sputum culture usually not available at time of explant tracheal aspirate <15 PMN/x400 presence of heavy Candida is contraindication
 - (f) No previous thoracic surgery on the side of harvest
 - (g) No significant chest trauma or lung contusion
 - (h) Negative for serum HIV and HBsAg
- * Smoking History is not a contraindication

1-2 Management of Donor

- * keep "dry": CVP or PCWP <10mmHg
- * intubation and mechanical ventilation

PEEP 5 cmH₂O, VT 15ml/kg, PIP < 20cmH₂O

Frequent sigh

- * heparinization 25000U IV 1/2-1 hr before harvest
- * PGE1 500mg/15-20ml N/S infusion to pulmonary artery or IV 10-20 min before harvest
- * Ceftazidime + Clindamycin

2. Donor-Recipient Match

- * ABO Blood Type:
Type O is NOT the universal donor
- * HLA Type
Usually not known at time of transplantation
- * Size : matched by predicted donor and recipient lung volume
Oversized allograft: compressive atelectasis
cardiac tamponade
SLT for emphysema pt: can adopt oversized allograft up to 20 %
BLT for IPF pt: undersized allograft (20 %) is desirable
- * CMV status
CMV (-)donor for CMV (-)recipient
- * HBsAg status

3. Selection of Recipient

End stage lung disease with

- (a) Expected survival less than 18 months

- (b) Age < 60
- (c) No active pulmonary or extrapulmonary infection
- (d) No significant coronary artery disease
- (e) Not on high-dose steroid
- (f) Adequate nutrition and ambulatory
- (g) No previous major abdominal or thoracic surgery
- (h) Psychologically stable

4. Timing for Lung Transplantation

4-1 COPD

- * Postbronchodilator FEV1 < 30% Predicted
- * Resting Hypoxemia < 55-60 mmHg
- * Hypercapnia
- * Significant Secondary Pulmonary Hypertension
- * Clinical Course
 - Declin of FEV1
 - Life-Threatening Exacerbation

4-2 DILD

- * VC, TLC < 60% Predicted
- * Resting Hypoxemia
- * Significant Secondary Pulmonary Hypertension
- * Clinical, Radiologic, Physiologic Score > 60 after 6 mos Tx

4-3 PPH

- * NYHA Class III or IV
- * Mean Rt. Atrial Pressure > 10mmHg
- * Mean Pulmonary Artery Pressure > 50mmHg
- * Cardiac Index < 2.5/min/m²

5. Pre-transplantation Evaluation of Recipient

Pulmonary Function

Standard PFT with ABGA
 Quantitative Ventilation-Perfusion Lung Scan
 Cardiopulmonary Exercise Test
 Chest CT

Cardiac Evaluation

Radionuclide Ventriculography

Doppler Echocardiography with Saline Test
 Right Heart Catheterization
 Left Heart Catheterization and Coronary Angiography
 Transesophageal Echocardiography

Others

ABO Typing
 HLA Typing and Panel of Reactive Antibodies (PRA)
 Serology for Hepatitis A, B and C: HIV: CMV

Psychosocial Evaluation

6. Immunosuppressive Treatment

7. Immediate Post-op. Care

7-1 General post-op care

- (1) Ventilator
 - Tidal volume: 12ml/kg, Rate: 12-14/min
 - PEEP: usually 5-7.5cm H₂O (NOT in SLT for COPD)
- (2) PGE1
 - between 0.01-0.1 μ g/kg/min
 - starts intra-op. (at least 15 min before clamping pulmonary artery)
- (3) Physiotherapy
 - starts 12 hrs post-op
- (4) Others
 - Dopamin 3 μ g/kg/min
 - Maintain diastolic BP < 80mmHg
 - Ketoconazole to increase CSA blood level

7-2 Prophylaxis for infection

- (1) Antibiotics
 - cefazoline pre-op
 - Ceftazidime + Vancomycin post-op
 - Change according to sputume culture or D/C in 7-10d
- (2) Acyclovir
 - 200mg bid po
 - First 6 MOS
- (3) Trimethoprim-Sulfamethoxazole (Bactrim)
 - Start day 21, 2T bid

6-1 Immunosuppressive regimen: Induction

DRUGS	REGIMEN
Cyclosporine	2-4 mg/hr IV drip immediate post-op.(50mg/50ml) Daily monitor blood level Switch to oral in several days (bioequivalent oral dose:3-4 times of IV dose)
Azathioprine	2mg/kg IV immediate PRE-op. 2mg/kg/d(100-125mg) po. Start 12 hrs post-op.
Corticosteroid	Methylprednisolone 1g IV INTRA-op, before reperfusion Methylprednisolone 1mg/kg/d IV for 3 days IV methylprednisolone or oral prednisolone 0.5mg/kg/d
ALG	10-15mg/kg/d IV for first 5-7 days Skin test : 0.1ml of 1:1000 dilution intradermally Premedication with tylenol (650mg)and benadryl(50mg) Stop if platelet < 50K or WBC < 4000

6-2 Immunosuppressive Regimen: Maintenance

DRUGS	REGIMEN
Cyclosporine	Titrate dose according to blood level 5-6mg/kg bid (300mg/300mg)initially Trough blood level 350-400 ng/ml to 8 wks 300-350 ng/ml 8-12 wks 300 ng/ml 3-6 mos 250-300 ng/ml 6 mos-1yr 185-225 ng/ml after 1yr
Azathioprine	2mg/kg/d Increase dose to 2.5-3mg/kg/d if rejection(+) Decrease dose if WBC < 4000/ml
Prednisone	0.5mg/kg/d for first 3 mos Taper to 15mg/d by 6mos then to 15mg/d qod by 1yr

Life long M-W-F protocol

4) Gancyclovir

CMV (-) recipient with CMV (+) donor

CMV (+) recipient

Post-op 3-12 wks

5mg/kg IV twice a day for 7 days,

then 5mg/kg once a day x5/wk

Hold acyclovir during treatment

Neutropenia

5) INH

Should be given to all Korean recipient

400 mg/d, life-long

6) Nystatin

At least for 3 months

8. Surveillance

- PFT

- weekly for postop. 3 months
 - monthly for 1 year

every 2-3 months life-long

Check FEV1 everyday home with portable spirometer

Notify Dr. if decrease more than 10% for 3 days

- TBLB

- 2-3 week after transplantation

- F/U in 8-12 week, 6 month, 1 year then annually