**Supplementary Table 1. Total study population.**

|  |  |
| --- | --- |
| **Variables** | **Total (n=274)** |
| Age, years | 54.6 ± 11.4 |
| Male sex, n (%) | 175 (63.9) |
| Body mass index, kg/m2 | 21.0 ± 4.1 |
| Single lung transplantation | 11 (4) |
| **Primary lung disease** |  |
| IPF | 149 (54.4) |
| CTD ILD | 49 (17.9) |
| Bronchiectasis | 17 (6.2) |
| LAM | 5 (1.8) |
| COPD, n (%) | 10 (3.6) |
| BO, n (%) | 16 (5.8) |
| Others, n (%) | 28 (10.2) |
| Hypertension, | 65 (23.7) |
| Diabetes mellitus | 79 (28.8) |
| Waiting in ICU | 180 (65.7) |
| Mechanical ventilation before LTx, n (%) | 105 (38.3) |
| ECMO before LTx | 85 (31) |
| ECMO after LTx | 118 (43.1) |
| Six-month mortality | 63 (23) |
| One-year mortality (264) | 89 (33.7) |

Values are expressed as means (standard deviations) or median (interquartile ranges).

IPF, idiopathic pulmonary fibrosis; CTD ILD, connective tissue disease interstitial lung disease; LAM, Lymphangioleiomyomatosis; COPD, chronic obstructive pulmonary disease; BO, Obliterative bronchiolitis; others, NSIP (Non-specific interstitial pneumonia), PPFE (Pleuroparenchymal fibroelastosis), ARDS (Acute Respiratory Distress syndrome), AFOP (Acute fibrinous and organizing pneumonia); ICU, intensive care unit; ECMO, extracorporeal membrane oxygenation; LTx, lung transplant.

**Supplementary Table 2. Risk factors in remain ECMO after lung transplantation.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Univariate** | | | | | **Multivariate\*** | | | | | | | | | |
| **Variables** | **OR** | | **CI** | | ***p*-value** | | | **OR** | | | | **CI** | | | ***p*-value** |
| Age | 0.987 | | 0.966-1.008 | | 0.218 | | | 0.969 | | | | 0.945-0.994 | | | 0.014 |
| Male sex | 1.713 | | 1.041-2.819 | | 0.034 | | |  | | | |  | | |  |
| Body mass index | 1.085 | | 1.020-1.155 | | 0.010 | | | 1.122 | | | | 1.042-1.207 | | | 0.002 |
| Single lung transplantation | 1.618 | | 0.482-5.435 | | 0.436 | | |  | | | |  | | |  |
| **Cause of LTx** |  |  | |  | | |  | | |  | | |  | | |
| IPF, n (%) | 0.779 | | 0.482-1.259 | | 0.308 | | |  | | | |  | | |  |
| CTD ILD, n (%) | 1.807 | | 0.970-3.369 | | 0.063 | | |  | | | |  | | |  |
| BE, n (%) | 0.386 | | 0.123-1.216 | | 0.104 | | |  | | | |  | | |  |
| LAM, n (%) | 0.879 | | 0.145-5.348 | | 0.879 | | |  | | | |  | | |  |
| COPD, n (%) | 0.140 | | 0.017-1.118 | | 0.064 | | |  | | | |  | | |  |
| BO, n (%) | 0.782 | | 0.276-2.216 | | 0.644 | | |  | | | |  | | |  |
| Others, n (%) | 2.682 | | 1.165-5.930 | | 0.020 | | |  | | | |  | | |  |
| Hypertension, n (%) | 0.848 | | 0.481-1.494 | | 0.568 | | |  | | | |  | | |  |
| Diabetes mellitus, n (%) | 0.802 | | 0.471-1.366 | | 0.416 | | |  | | | |  | | |  |
| **TTE** |  |  | |  | | |  | | |  | | |  | | |
| Ejection fraction | 0.995 | | 0.970-1.021 | | 0.718 | | |  | | | |  | | |  |
| RVSP (16/29 missing) | 1.008 | | 0.996-1.020 | | 0.186 | | |  | | | |  | | |  |
| E/e’ (31/43 missing) | 1.030 | | 0.975-1.088 | | 0.287 | | |  | | | |  | | |  |
| Mean PAP, mmHg  (50/60 missing) | 1.012 | | 0.983-1.041 | | 0.422 | | |  | | | |  | | |  |
| Pulmonary hypertension  (50/60 missing) | 0.911 | | 0.488-1.702 | | 0.770 | | |  | | | |  | | |  |
| ICU care before LTx | 1.179 | | 0.711-1.956 | | 0.524 | | |  | | | |  | | |  |
| ICU waiting time, days | 1.006 | | 0.995-1.017 | | 0.296 | | |  | | | |  | | |  |
| Mechanical ventilation before LTx | 1.631 | | 0.997-2.668 | | 0.052 | | |  | | | |  | | |  |
| ECMO before LTx | 1.556 | | 0.929-2.606 | | 0.093 | | |  | | | |  | | |  |
| **Operation** |  |  | |  | | |  | | |  | | |  | | |
| Operation time, min | 1.005 | | 1.002-1.009 | | 0.001 | | |  | | | |  | | |  |
| Operation time > 470min | 2.535 | | 1.526-4.209 | | <0.001 | | | 1.768 | | | | 0.983-3.179 | | | 0.057 |
| Ischemic time, Right lung, min | 1.001 | | 0.998-1.004 | | 0.459 | | |  | | | |  | | |  |
| Ischemic time, Left lung, min | 1.002 | | 0.999-1.005 | | 0.186 | | |  | | | |  | | |  |
| Total fluid input | 1.000 | | 1.000-1.000 | | 0.010 | | |  | | | |  | | |  |
| Total fluid output | 1.000 | | 1.000-1.000 | | 0.049 | | |  | | | |  | | |  |
| Difference between Input and  output | 1.000 | | 1.000-1.000 | | 0.110 | | |  | | | |  | | |  |
| Red blood cell transfusion | 1.000 | | 1.000-1.000 | | 0.027 | | |  | | | |  | | |  |
| Transfusion during Op > 3.8 liters | 2.790 | | 1.576-4.941 | | <0.001 | | | 2.825 | | | | 1.434-5.567 | | | 0.003 |
| Blood loss | 1.000 | | 1.000-1.000 | | 0.030 | | |  | | | |  | | |  |
| **Post-operation** |  |  | |  | | |  | | |  | | |  | | |
| ICU care after LTx, days | 1.093 | | 1.058-1.130 | | <0.001 | | |  | | | |  | | |  |
| HD after LTx, days | 1.003 | | 1.000-1.007 | | 0.051 | | |  | | | |  | | |  |
| Six-month mortality | 1.928 | | 1.092-3.404 | | 0.024 | | |  | | | |  | | |  |
| One-year mortality\*  (without within 1yrs) | 2.222 | | 1.345-3.673 | | 0.002 | | |  | | | |  | | |  |
| **Donor** | | | | | | | | |  | |  | | |  | |
| Age, year | 1.025 | | 1.005-1.045 | | 0.015 | | | 1.029 | | | | 1.007-1.052 | | | 0.010 |
| Male sex | 0.854 | | 0.523-1.393 | | 0.526 | | |  | | | |  | | |  |
| Mechanical ventilation, hours | 1.000 | | 0.998-1.003 | | 0.778 | | |  | | | |  | | |  |
| Donor PaO2/FiO2 ratio | 0.995 | | 0.992-0.998 | | <0.001 | | | 0.994 | | | | 0.991-0.997 | | | <0.001 |
| Donor/recipient TLC ratio | 1.014 | | 1.001-1.028 | | 0.037 | | | 1.019 | | | | 1.003-1.036 | | | 0.017 |
| pTLC <80, >120 | 1.249 | | 0.724-2.155 | | 0.425 | | |  | | | |  | | |  |

OR, odds ratio; CI, confidence interval; ECMO, extracorporeal membrane oxygenation; LTx, lung transplant; PaO2/FiO2, ratio of arterial oxygen concentration to the fraction of inspired oxygen; IPF, idiopathic pulmonary fibrosis; CTD ILD, connective tissue disease interstitial lung disease, BE; bronchiectasis; LAM, Lymphangioleiomyomatosis; COPD, chronic obstructive pulmonary disease; BO, Obliterative bronchiolitis; others, NSIP(Non-specific interstitial pneumonia), PPFE(Pleuroparenchymal fibroelastosis), ARDS(Acute Respiratory Distress syndrome), AFOP(Acute fibrinous and organizing pneumonia); TLC, total lung capacity; TTE, transthoracic echocardiography; RVSP, right ventricular systolic pressure; E/e’; the ratio of early diastolic mitral inflow velocity to early diastolic mitral annulus velocity (is used for the evaluation of LV filling pressure); mean PAP, mean pulmonary artery pressure. \*The multivariable logistic regression model was done by adjusting for age, sex, body mass index, donor age, donor PaO2/FiO2 ratio, donor/recipient TLC ratio, mechanical ventilation before LTx, transfusion during operation, and operation time.

**Supplementary Table 3. Comparison between wean successfully ECMO and remain ECMO after lung transplantation in bridged ECMO patients.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **ECMO after LTx (n=43)** | | **No ECMO after LTx (n=42)** | ***p*-value** | **OR** | **CI** | ***p*-value** |
| Age, years | 56.7 ± 9.9 | | 56.1 ± 8.5 | 0.773 | 0.97 | 0.92-1.02 | 0.256 |
| Male sex | 22 (51.2) | | 33 (78.6) | 0.008 |  |  |  |
| Body mass index, kg/m2 | 22.6 ± 3.9 | | 20.4 ± 4.3 | 0.015 | 1.20 | 1.04-1.38 | 0.008 |
| Single lung transplantation | 1 (2.3) | | 0 (0) | 1.0 |  |  |  |
| **Cause of LTx** |  |  | | 0.231 |  |  |  |
| IPF | 24 (55.8) | | 24 (57.1) |  |  |  |  |
| CTD ILD | 8 (18.6) | | 8 (19) |  |  |  |  |
| BE | 0 (0) | | 3 (7.1) |  |  |  |  |
| LAM | 1 (0) | | 0 (0) |  |  |  |  |
| COPD | 0 (0) | | 2 (4.8) |  |  |  |  |
| BO | 1 (2.3) | | 1 (2.4) |  |  |  |  |
| Others | 4 (9.5) | | 4 (9.5) |  |  |  |  |
| Hypertension, | 11 (25.6) | | 11 (26.2) | 0.949 |  |  |  |
| Diabetes mellitus | 14 (32.6) | | 13 (31) | 0.874 |  |  |  |
| **TTE** |  |  | |  |  |  |  |
| Ejection fraction | 60.9 ± 14.7 | | 63.2 ± 8.0 | 0.384 |  |  |  |
| RVSP (2/3 missing) | 52.2 ± 23.5 | | 47.7 ± 14.3 | 0.300 |  |  |  |
| E/e’ (13/9 missing) | 11.2 ± 4.1 | | 10.7 ± 3.5 | 0.583 |  |  |  |
| Mean PAP, mmHg  (25/12 missing) | 26.8 ± 10.0 | | 27.8 ± 10.1 | 0.757 |  |  |  |
| Pulmonary hypertension  (25/12 missing) | 10 (55.6) | | 14 (46.7) | 0.551 |  |  |  |
| ECMO days before LTx | 14.9 ± 11.0 | | 13.0 ± 10.2 | 0.411 |  |  |  |
| **Operation** |  |  | |  |  |  |  |
| Operation time, min | 520.1 ± 65.5 | | 499.6 ± 61.8 | 0.129 |  |  |  |
| Operation time > 470min | 33 (76.7) | | 27 (64.3) | 0.208 |  |  |  |
| Ischemic time, Right lung, min | 230.3 ± 83.9 | | 236.5 ± 63.8 | 0.703 |  |  |  |
| Ischemic time, Left lung, min | 336.0 ± 90.2 | | 341.8 ± 77.0 | 0.751 |  |  |  |
| Total fluid input, milliliters | 14233.8 ± 8600.6 | | 10140.2 ± 4313.7 | 0.008 |  |  |  |
| Total fluid output, milliliters | 5812.9 ± 3868.2 | | 4463.0 ± 3131.6 | 0.083 |  |  |  |
| Difference between Input and output | 7876.7 ± 7618.1 | | 5589.6 ± 2888.3 | 0.079 |  |  |  |
| Red blood cell transfusion | 4662.2 ± 6194.7 | | 3129.5 ± 2266.4 | 0.013 |  |  |  |
| Transfusion > 3.8 liters | 23 (53.5) | | 7 (16.7) | <0.001 | 9.02 | 2.61-31.18 | 0.001 |
| Blood loss | 4415.2 ± 3559.7 | | 3032.7 ± 2821.6 | 0.052 |  |  |  |
| **Post-operation** |  |  | |  |  |  |  |
| ICU care after LTx, days | 29.1 ± 40.0 | | 8.0 ± 6.8 | 0.001 |  |  |  |
| HD after LTx, days | 100.2 ± 86.7 | | 63.8 ± 60.1 | 0.029 |  |  |  |
| Six-month mortality | 16 (37.2) | | 6 (14.3) | 0.016 |  |  |  |
| One-year morality | 22 (55%) | | 11 (26.2) | 0.008 |  |  |  |
| **Donor** |  |  | |  |  |  |  |
| Age, years | 46.3 ± 11.7 | | 40.3 ± 12.9 | 0.038 | 1.03 | 0.99-1.08 | 0.162 |
| Male sex | 28 (65.1) | | 26 (61.9) | 0.758 |  |  |  |
| Mechanical ventilation, hours | 190.3 ± 146.9 | | 180.5 ± 95.1 | 0.718 |  |  |  |
| Donor PaO2/FiO2 ratio | 411.8 ± 89.4 | | 466.6 ± 98.6 | 0.009 | 0.99 | 0.98-0.99 | 0.001 |
| Donor/recipient TLC ratio | 113.3 ± 21.4 | | 105.5 ± 19.5 | 0.083 |  |  |  |
| pTLC <80, >120 | 15 (34.9) | | 13 (31) | 0.700 |  |  |  |

Values are expressed as means (standard deviations) or median (interquartile ranges).

ECMO, extracorporeal membrane oxygenation; LTx, lung transplant; IPF, idiopathic pulmonary fibrosis; CTD ILD, connective tissue disease interstitial lung disease, BE; bronchiectasis; LAM, Lymphangioleiomyomatosis; COPD, chronic obstructive pulmonary disease; BO, Obliterative bronchiolitis; others, NSIP(Non-specific interstitial pneumonia), PPFE(Pleuroparenchymal fibroelastosis), ARDS(Acute Respiratory Distress syndrome), AFOP(Acute fibrinous and organizing pneumonia); TTE, transthoracic echocardiography; RVSP, right ventricular systolic pressure; E/e’; the ratio of early diastolic mitral inflow velocity to early diastolic mitral annulus velocity (is used for the evaluation of LV filling pressure); mean PAP, mean pulmonary artery pressure; ICU, intensive care unit; HD, hospital day; PaO2/FiO2, ratio of arterial oxygen concentration to the fraction of inspired oxygen; TLC, total lung capacity.

**Supplementary Table 4. Comparison of echocardiography between wean successfully ECMO and remain ECMO after lung transplantation.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **ECMO after LTx (n=118)** | **No ECMO after LTx (n=156)** | ***p*-value** |
| **Before LTx** |  |  |  |
| Ejection fraction (4/6 missing) | 63.1 ± 11.3 | 63.5 ± 7.6 | 0.719 |
| RVSP (16/28 missing) | 54.1 ± 25.1 | 50.2 ± 19.7 | 0.185 |
| E/e’ (31/41 missing) | 11.9 ± 9.7 | 10.8 ± 3.3 | 0.230 |
| **After LTx** |  |  |  |
| Ejection fraction (9/6 missing) | 66.7 ± 52.1 | 62.4 ± 8.8 | 0.319 |
| RVSP (87/62 missing) | 32.7 ± 11.1 | 31.5 ± 7.6 | 0.205 |
| E/e’ (58/40 missing) | 11.4 ± 7.6 | 10.1 ± 3.4 | 0.409 |

Values are expressed as means (standard deviations) or median (interquartile ranges).

ECMO, extracorporeal membrane oxygenation; LTx, lung transplant; RVSP, right ventricular systolic pressure; E/e’; the ratio of early diastolic mitral inflow velocity to early diastolic mitral annulus velocity (is used for the evaluation of LV filling pressure).