

Table S1 Comparison of PVR, NT-proBNP and 6-MWD before and after using riociguat among 26 patients after matching

Variables	Before riociguat	After riociguat	Change	P value
PVR (dynes·sec·cm ⁻⁵)				
≥800, n=14	1207 (1030–1666)	1121 (881–1311)	–116 (–264, –52)	<0.01
<800, n=12	644 (548–758)	606 (488–756)	11 (–47, 53)	0.94
NT-proBNP (pg/mL)	1411 (402–2577)	665 (300–1901)	–394 (–966, –116)	<0.01
6-MWD (m)	330 (280–425)	385 (328–446)	17 (7–58)	<0.01

Continuous variables are presented as median (25th–75th percentile) for non-normally distributed data. PVR, pulmonary vascular resistance; NT-proBNP, N-terminal pro-brain natriuretic peptide; 6-MWD, 6-minute walking distance.

Table S2 Clinical and hemodynamic characteristics of patients with PVR ≥800 dynes·sec·cm⁻⁵

Variables	Riociguat (n=22)	Control (n=20)	P value
Gender			0.02
Male/female	10 (45.5)/12 (54.5)	16 (80)/4 (20)	
Age (years)	59 (48–63)	57 (34–64)	0.72
BMI (kg/m ²)	22.64±3.46	24.18±3.12	0.14
BSA (m ²)	1.63±0.24	1.81±0.12	<0.01
Time from diagnosis to PEA (m)	15.5 (6.5–29.2)	7.5 (2.5–17.9)	0.06
Smoking history	5 (22.7)	12 (60)	0.01
Acute PE history	12 (54.5)	16 (80)	0.08
Comorbidities			
Hypertension	9 (40.9)	4 (20)	0.14
Coronary heart disease	3 (13.6)	3 (15)	>0.99
COPD	7 (31.8)	2 (10)	0.18
Deep venous thrombosis	8 (36.4)	4 (20)	0.24
Preoperative laboratory tests			
Hemoglobin (g/L)	139.6±17	144±18.7	0.43
Neutrophil (×10 ⁹ /L)	3.03 (2.72–3.72)	3.62 (2.65–4.18)	0.27
Lymphocyte (×10 ⁹ /L)	1.74±0.67	2.11±0.61	0.07
Platelet (×10 ⁹ /L)	197.4±66.7	211.5±52.5	0.46
Total bilirubin (μmol/L)	27 (14.58–41.61)	14.36 (11.92–22.16)	0.01
Serum creatinine (μmol/L)	73.1±10.7	75.6±10.2	0.48
NT-proBNP (pg/ml)	1283 (415–1901)	908 (622–1456)	0.86
Preoperative TTE			
TDRA (mm)	56.1±13.4	55.4±8.1	0.74
RVTDD (mm)	50.5±8.1	51.5±5.1	0.63
LVEDD (mm)	39±5.2	40±4.6	0.51
RV/LV	1.47±0.34	1.49±0.28	0.90
TR velocity (cm/sec)	451 (398–496)	436 (413–462)	0.62
TAPSE (mm)	14.49±3.61	16.46±2.07	0.04
TVRS (cm/sec)	9.17±2.52	9.83±1.97	0.36
Preoperative RHC			
Cardiac output (L/min)	2.46±0.37	2.89±0.64	0.04
Cardiac index (L/min/m ²)	1.41 (1.16–1.77)	1.52 (1.34–1.83)	0.35
Right atrial pressure (mmHg)	6 (3–10)	5 (2–7)	0.61
Right ventricular pressure (mmHg)	33.1±9.6	31.6±7	0.57
Systolic PAP (mmHg)	87.1±17.7	88.2±16.3	0.84
Diastolic PAP (mmHg)	29 (26–35)	28 (24–35)	0.36
Mean PAP (mmHg)	48.5±8.8	49.2±9.2	0.82
PVR (dynes·sec·cm ⁻⁵)	1207 (974–1698)	1072 (938–1325)	0.17
6-MWD (m)	358 (106–426)	384 (334–475)	0.17
WHO-FC			0.13
II	5 (22.7)	10 (50)	
III	11 (50)	8 (40)	
IV	6 (27.3)	2 (10)	

Continuous variables are presented as mean ± standard deviation for normally distributed data or median (25th–75th percentile) for non-normally distributed data. Categorical variables are reported as frequencies (percentages). BMI, body mass index; BSA, body surface area; PEA, pulmonary endarterectomy; PE, pulmonary embolism; COPD, chronic obstructive pulmonary diseases; NT-proBNP, N-terminal pro-brain natriuretic peptide; TTE, transthoracic echocardiography; TDRA, transverse diameter of the right atrium; RVTDD, diastolic right ventricular basal segment transverse diameter; LVEDD, left ventricular end-diastolic diameter; RV/LV, right ventricular diameter/left ventricular diameter; TR, tricuspid regurgitation; TAPSE, tricuspid annular plane systolic excursion; TVRS, systolic tricuspid velocity of right ventricle; RHC, right heart catheterization; PAP, pulmonary arterial pressure; PVR, pulmonary vascular resistance; 6-MWD, 6-minute walking distance; WHO-FC, World Health Organization functional class.

Table S3 Intraoperative data and postoperative outcomes of patients with PVR ≥ 800 dynes-sec-cm⁻⁵

Variables	Riociguat (n=22)	Control (n=20)	P value
Intraoperative data			
CPB time (min)	343.7±48.1	361.7±41.9	0.65
Aortic blocking time (min)	160.1±20.5	177.7±36.2	0.07
Circulatory arrest time (min)	66.2±12.7	64±14.3	0.78
Total operation time (min)	592.5±71.9	608.5±89.7	0.54
Surgical classification			0.84
I	13 (59.1)	11 (55)	
II	6 (27.3)	7 (35)	
III	3 (13.6)	2 (10)	
Postoperative cardiac function			
Systolic PAP (mmHg)	37.1±12.1	41.8±15.8	0.28
Diastolic PAP (mmHg)	16.1±5.9	14.1±8	0.37
Mean PAP (mmHg)	23.2±6.2	23.2±6.8	0.99
Mean PAP ≥ 25 mmHg	9 (40.9)	6 (30)	0.46
PVR (dynes-sec-cm ⁻⁵)	385 (302–480)	361 (276–402)	0.71
Decrease in systolic PAP (mmHg)	50.1±18.9	46.5±24.3	0.59
Decrease in mean PAP (mmHg)	25.3±9.5	26±10.6	0.84
Decrease in PVR (dynes-sec-cm ⁻⁵)	863 (584–1305)	670 (542–933)	0.19
TR velocity (cm/sec)	283 (249–322)	281 (252–320)	0.81
RV/LV	1.03±0.18	0.99±0.14	0.39
Mortality	1 (3.8)	0	>0.99
Mechanical ventilation (h)	66.9 (64–98)	53.3 (40.1–68.6)	0.01
Length of ICU stays (h)	139 (114–199)	115 (89–163)	0.08
Length of hospital stays (d)	21 (16–31)	20 (15–24)	0.69
Complication			
PMV	10 (45.5)	4 (20)	0.08
Atrial fibrillation	5 (22.7)	3 (15)	0.81
Severe infection	5 (22.7)	1 (5)	0.23
Pericardial effusion	3 (13.6)	4 (20)	>0.99
Severe RPE	7 (31.8)	2 (10)	0.18
Acute kidney injury	14 (63.6)	14 (70)	0.66
Delirium	2 (9.1)	1 (5)	>0.99

Continuous variables are presented as mean \pm standard deviation for normally distributed data or median (25th–75th percentile) for non-normally distributed data. Categorical variables are reported as frequencies (percentages). CPB, cardiopulmonary bypass; PAP, pulmonary arterial pressure; PVR, pulmonary vascular resistance; TR, tricuspid regurgitation; RV/LV, right ventricular diameter/left ventricular diameter; ICU, intensive care unit; PMV, prolonged mechanical ventilation; RPE, reperfusion pulmonary edema.