

**Supplementary Table S1. Missing data**

Variable	Number of missing	Variable	Number of missing
Male sex	0	BT	7
Age	0	WBC	0
Hight	0	BUN	2
Weight	0	Creatinine	12
BMI	0	AST	4
Hypertension	0	ALT	4
History of diabetes	0	Initial glucose	16
Chronic renal disease	0	Glucose before ventilator	53
Cerebral disease	0	Glucose before ECMO	55
Cancer	4	Max glucose	53
Heart failure	0	Min glucose	56
Ischemic heart disease	0	SOFA	53
Dyslipidaemia	0	PaO <sub>2</sub> /FiO <sub>2</sub> ratio before ECMO	16
Arrhythmia	0	Ventilator to ECMO >7 days	4
COPD	0	Cardiac arrest before ECMO start	8
Smoking	0	Inotropic use before ECMO	12
Initial systolic BP	6	Steroid use	14
Initial diastolic BP	6	RRT before ECMO	9
HR	6	Mortality	0

BP, blood pressure; HR, heart rate; BT, body temperature; WBC, white blood cell; BUN, blood urea nitrogen; AST, aspartate aminotransferase; ALT, alanine aminotransferase; ECMO, extracorporeal membrane oxygenation; SOFA, sequential organ failure assessment; PaO<sub>2</sub>/FiO<sub>2</sub>, partial pressure of arterial oxygen over fractional inspired oxygen. RRT, renal replacement therapy

**Supplementary Table S2. Patients 'characteristics**

Variable	Survivors (n = 85)	Nonsurvivors (n = 110)	p-value
Male sex	60 (70.6)	76 (69.1)	0.47
Age, years	60 (50-60.5)	64 (56-69)	0.002
Hight, cm	166.32 (9.17)	165.43 (7.35)	0.45
Weight, kg	73 (65-86)	69 (62-78)	0.01
BMI, kg/m <sup>2</sup>	26.4 (24.55-30.95)	25.25 (23.3-27.45)	0.06
Hypertension	47 (55.3)	56 (50.9)	0.28
Diabetes	21 (24.7)	46 (39.1)	0.02
Chronic renal disease	4 (4.7)	5 (4.5)	0.70
Cerebral disease	4 (4.7)	8 (7.3)	0.29
Cancer	0	7 (6.4)	0.04
Heart failure	2 (2.4)	2 (1.8)	0.68
Ischemic heart disease	1 (1.2)	5 (4.5)	0.22
Dyslipidaemia	15 (17.6)	15 (13.6)	0.44
Arrhythmia	1 (1.2)	1 (0.9)	0.70
COPD	0	1 (0.9)	0.63
Smoking			0.01

Current smoker	9 (10.6)	4 (3.6)
Ex-smoker	11 (12.9)	12 (10.9)
Never smoker	58 (68.2)	67 (60.9)

Values are presented as mean (SD) or median (IQR) or n (%).

BMI, body mass index; COPD, chronic obstructive pulmonary disease

**Supplementary Table S3. Data of initial vital signs and laboratory test**

Variable	Survivors (n = 85)	Nonsurvivors (n = 110)	<i>p</i> -value
Initial systolic BP, mmHg	133 (117-149.75)	127 (112-149)	0.42
Initial diastolic BP, mmHg	82.37 (15.97)	75.30 (16.16)	<0.01
HR, /min	88.5 (76-109.5)	91 (76.5-102)	0.83
BT, °C	37.10 (36.7-37.5)	37 (36.5-37.6)	0.61
WBC, 10 <sup>3</sup> /mm <sup>3</sup>	8.4 (5.44-12.04)	7.45 (5.36-12.02)	0.59
BUN, mg/dL	18.8 (14.65-23.9)	20.5 (14.88-30.11)	0.09
Creatinine, mg/dL	0.82 (0.66-1.16)	0.87 (0.65-1.35)	0.63
AST, U/L	50 (34-83)	53 (40.9-88.75)	0.26
ALT, U/L	35 (22-55.5)	37 (24-65)	0.49
Initial glucose, mg/dL	148 (125-198)	154 (115-213)	0.99
Glucose before ventilator, mg/dL	156 (130.5-186.25)	159.5 (121-247.75)	0.64
Glucose before ECMO, mg/dL	172.5 (138-229.5)	202.5 (159-278)	0.01
Max glucose, mg/dL	320.5 (241.25-405.25)	339 (275.25-421.75)	0.33
Min glucose, mg/dL	103 (87.5-121.5)	85 (59-108)	<0.01
SOFA	7.5 (6-10)	9 (7-12)	0.02
PaO <sub>2</sub> /FiO <sub>2</sub> ratio before ECMO, mmHg	76.95 (59.93-100.68)	73.09 (59.85-97.06)	0.55
Ventilator to ECMO >7 days	15(17.9)	30(28.0)	0.10
Cardiac arrest before ECMO start	5 (6.0)	10 (9.7)	0.35
Inotropic use before ECMO	44 (53.7)	61 (60.4)	0.36
Steroid use	73 (98.6)	104 (97.2)	0.51
RRT before ECMO	4 (4.8)	15 (14.7)	0.03

Values are presented as mean (SD) or median (IQR) or n (%).

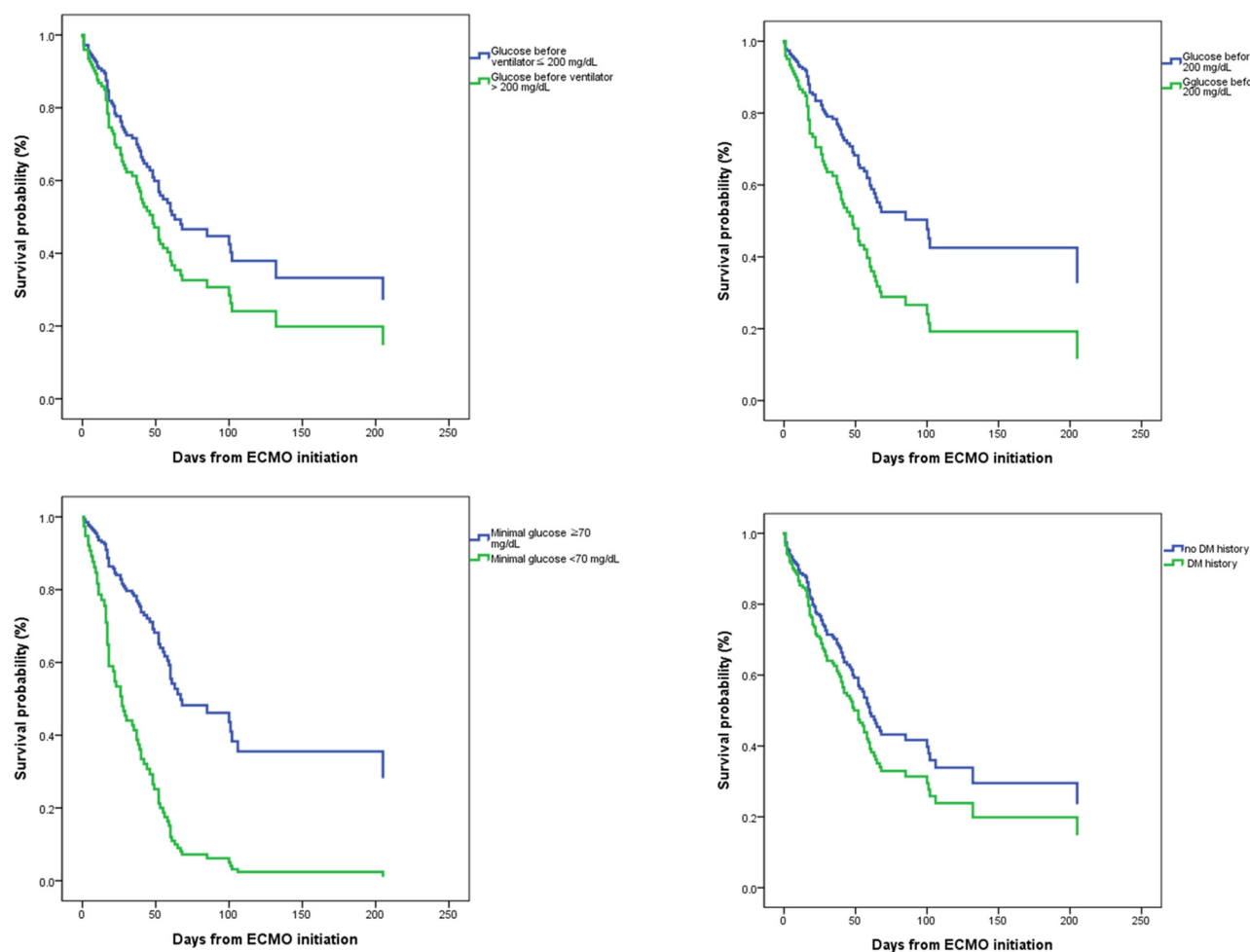
BP, blood pressure; HR, heart rate; BT, body temperature; WBC, white blood cell; BUN, blood urea nitrogen; AST, aspartate aminotransferase; ALT, alanine aminotransferase; ECMO, extracorporeal membrane oxygenation; SOFA, sequential organ failure assessment; PaO<sub>2</sub>/FiO<sub>2</sub>, partial pressure of arterial oxygen over fractional inspired oxygen. RRT, renal replacement therapy

**Supplementary Table S4.** Cox regression analysis for mortality after ECMO support in COVID-19

	Model 1		Model 2		Model 3		Model 4	
Variable	HR (95% CI)	<i>P</i> -value	HR (95% CI)	<i>p</i> -value	HR (95% CI)	<i>P</i> -value	HR (95% CI)	<i>P</i> -value
Age, years								
< 50	Reference		Reference		Reference		Reference	
50–59	1.13 (0.45–2.83)	0.80	1.06 (0.41–2.76)	0.91	0.95 (0.40– 2.23)	0.90	1.20 (0.59–2.42)	0.62
60–69	1.79 (0.84–3.83)	0.13	1.93 (0.86–4.36)	0.11	1.60 (0.80– 3.22)	0.19	1.69 (0.93– 3.06)	0.09
≥70	2.25 (0.98–5.18)	0.06	2.73 (1.11–6.70)	0.03	2.07 (0.91– 4.67)	0.08	1.81 (0.89–3.70)	0.10
BMI, kg/m <sup>2</sup>								
<18.5	9.78 (2.10–45.66)	<0.01	9.48 (2.07–43.39)	<0.01	13.80 (2.90–65.62)	<0.01	11.35 (2.56–50.40)	<0.01
18.5–24.9	Reference		Reference		Reference		Reference	
≥25	0.88 (0.54–1.43)	0.59	0.78 (0.48–1.26)	0.31	0.85 (0.52– 1.38)	0.51	0.97 (0.63–1.48)	0.87
RRT before ECMO	2.19 (1.04–4.59)	0.04	2.25 (1.15–4.41)	0.02	3.09 (1.62–6.38)	<0.01	2.49 (1.39–4.48)	<0.01
Glucose before ventilator >200 mg/dL	1.47 (0.89–2.43)	0.14	-	-	-	-	-	-
Glucose before ECMO >200 mg/dL	-	-	1.93 (1.19–3.13)	<0.01	-	-	-	-
Minimal glucose <70 mg/dL	-	-	-	-	3.61 (2.15–6.05)	<0.01	-	-
Diabetes history	-	-	-	-	-	-	1.32 (0.87–2.00)	0.19

ECMO, extracorporeal membrane oxygenation; RRT, renal replacement therapy; DM, diabetes mellitus; BMI, body mass index; HR, hazard ratio; CI, confidence interval

Supplementary Figure S1. Survival curves



Supplementary Figure S2. Survival curves

