

Supplementary Material

Supplementary Table 1 Demographic data, Clinical settings, Laboratory features, and Previous treatment of severe COVID-19 pneumonia patients at tocilizumab administration day

Parameters n (%), mean \pm SD, or median (IQR)	All patients (n = 109)	Intubated (n = 32)	Non-intubated (n = 77)	P value
Demographic Data				
Age (years)	60.3 \pm 14.2	64.7 \pm 14.4	58.4 \pm 13.7	0.034
Age \geq 70 years (%)	29 (26.6)	13 (40.6)	16 (20.8)	0.033
Male (%)	56 (51.4)	16 (50.0)	40 (51.9)	0.853
BMI (kg/m ²)	26.8 (24.0, 31.2)	27.2 (23.5, 31.7)	26.8 (24.1, 31.2)	0.806
Comorbidity (%)	67 (61.5)	20 (62.5)	47 (61.0)	0.886
Chronic lung disease	5 (4.6)	3 (9.4)	2 (2.6)	0.150
Diabetes mellitus	36 (33.0)	11 (34.4)	25 (32.5)	0.847
Hypertension	51 (46.8)	16 (50.0)	35 (45.5)	0.665
Chronic kidney disease	14 (12.8)	5 (15.6)	9 (11.7)	0.547
Coronary artery disease	7 (6.4)	3 (9.4)	4 (5.2)	0.416
Cerebrovascular disease	7 (6.4)	3 (9.4)	4 (5.2)	0.416
Cancer	7 (6.4)	2 (6.3)	5 (6.5)	1.000
Autoimmune disease	4 (3.7)	1 (3.1)	3 (3.9)	1.000
COVID-19 vaccination (n =103) (%)	21 (20.4)	4 (13.3)	17 (23.3)	0.255

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Clinical settings				
COVID-19 illness duration (days)	9.0 (7.0, 11.0)	7.5 (6.0, 9.0)	9.0 (7.0, 11.0)	0.003
Non-invasive ventilation (%)	18 (16.5)	8 (25.0)	10 (13.0)	0.124
SpO ₂ /FiO ₂ ratio	163.3 (118.8, 240.0)	132.0 (98.2, 166.7)	165.0 (123.7, 242.5)	0.009
Respiratory rate/min	23.0 (20.0, 27.0)	24.0 (20.0, 28.0)	23.0 (20.0, 25.5)	0.087
Laboratory features				
WBC (x 10 ⁶ /mm ³)	10.5 ± 4.4	10.0 ± 5.0	10.7 ± 4.1	0.438
Platelet (x 10 ⁶ /mm ³)	248.4 ± 85.7	226.7 ± 76.6	257.5 ± 88.1	0.087
IL-6 (n = 90) (pg/ml)	43.6 (18.2, 75.2)	51.7 (20.5, 82.2)	32.4 (15.4, 73.0)	0.240
C-reactive protein (mg/L)	76.4 (45.4, 133.0)	79.0 (37.6, 108.5)	73.3 (46.7, 134.2)	0.323
Lactate dehydrogenase (U/L)	402.0 (307.5, 527.5)	395.0 (304.0, 549.3)	404.0 (308.5, 472.5)	0.558
eGFR (ml/min/1.73m ²)	94.5 (74.8, 102.7)	87.5 (57.8, 101.0)	96.0 (79.1, 106.2)	0.058
Sodium (mmol/L)	135.8 ± 3.4	136.9 ± 3.4	135.4 ± 3.4	0.036
Potassium (mmol/L)	4.2 ± 0.5	4.1 ± 0.6	4.3 ± 0.5	0.046
Chloride (mmol/L)	100.6 ± 4.6	101.9 ± 4.4	100.1 ± 4.6	0.054
Bicarbonate (mmol/L)	23.1 ± 3.3	22.6 ± 3.5	23.3 ± 3.2	0.294
Previous treatment				
IV methylprednisolone (mg)	500.0 (250.0, 1000.0)	500 (312.5, 1000.0)	500.0 (250.0, 875.0)	0.207

Parameters n (%), mean ± SD, or median (IQR)	All patients (n = 109)	Intubated (n = 32)	Non-intubated (n = 77)	P value
Remdesivir (%)	36 (33.0)	10 (31.3)	26 (33.8)	0.799
Prophylactic anticoagulant (%)	98 (89.9)	29 (90.6)	69 (89.6)	1.000
Baricitinib (%)	8 (7.3%)	2 (6.3%)	6 (7.8%)	1.000
Tofacitinib (%)	7 (6.4)	2 (6.3)	5 (6.5)	1.000

Note: P < 0.05: significant (shown in bold).

Abbreviations: BMI, body mass index; eGFR, estimated glomerular filtration rate; IL, interleukin; IQR, interquartile range; IV, intravenous; SD, standard deviation; SpO₂/ FiO₂ ratio, pulse oximetric saturation to fraction inspired oxygen ratio; WBC, white blood cell count.

Supplementary Table 2 Sensitivity, Specificity, Positive predictive value, and Positive likelihood ratio for each cut-off point of the scoring system

Score cut-off point	Patients with progressive respiratory failure (%)	Patients without progressive respiratory failure (%)	Sensitivity	95% CI	Specificity	95% CI	Positive predictive value	95% CI	Positive likelihood ratio	95% CI
≥ 0	32 (29.4)	77 (70.6)	100.0	-	0.0	-	-	-	1.0	-
≥ 1	30 (37.5)	50 (62.5)	93.8	79.2-99.2	35.1	24.5-46.8	37.5	26.9-49.0	1.4	1.2-1.7
≥ 2	11 (61.1)	7 (38.9)	34.4	18.6-53.2	90.9	82.2-96.3	61.1	35.7-82.7	3.8	1.6-8.9
≥ 3	2 (100.0)	0 (0.0)	6.3	0.9-20.8	100.0	95.3-100.0	100.0	15.8-100.0	-	-

Abbreviations: CI, confidence interval.