

Table S1 General characteristics of patients with COVID-19 after propensity score match (1:1 matched and 1:2 matched) in corticosteroids treatment and non-corticosteroids treatment groups

Characteristics	1:1 matched			1:2 matched			P value
	Total (n=400)	Corticosteroids treatment (n=200)	Non-corticosteroids treatment (n=200)	Total (n=357)	Corticosteroids treatment (n=119)	Non-corticosteroids treatment (n=238)	
Age, years	61 (48–69)	62 (47–71)	61 (50–67)	61 (50–68)	59 (45–68)	61 (51–68)	0.154
Sex							0.133
Female	198 (49.5%)	101 (50.5%)	97 (48.5%)	193 (54%)	71 (59.7%)	122 (51.3%)	
Male	202 (50.5%)	99 (49.5%)	103 (51.5%)	164 (45.9%)	48 (40.3%)	116 (48.7%)	
Symptoms on admission							
Cough	272 (68%)	139 (69.5%)	133 (66.5%)	234 (65.5%)	83 (69.7%)	151 (63.4%)	0.237
Sputum	115 (28.8)	62 (31%)	53 (26.5%)	98 (27.5%)	31 (26.1%)	67 (28.2%)	0.675
Dyspnea	143 (35.8%)	75 (37.5%)	68 (34%)	124 (34.7%)	41 (34.5%)	83 (34.9%)	0.937
Fatigue	207 (51.8%)	96 (48%)	111 (55.5%)	174 (48.7%)	56 (47.1%)	118 (49.6%)	0.653
Fever	322 (80.5%)	164 (82%)	158 (79%)	281 (78.7%)	99 (83.2%)	182 (76.5%)	0.144
Laboratory findings							
NLR	3.65 (2.29–6.38)	3.91 (2.62–6.74)	3.33 (2.15–6.17)	3.01 (2.04–4.65)	3.20 (2.24–4.99)	2.84 (1.92–4.60)	0.062
Platelet ($\times 10^9/L$; normal range: 125–350)	219 (158–294)	213 (155–293)	226 (162–302)	231 (175–290)	226 (161–310)	231 (177–285)	0.905
LDH (U/L; normal range: 109.0–240.0)	234 (189–317)	237 (194–317)	233 (181–317)	205 (177–258)	209 (181–251)	205 (176–261)	0.959
ALT (U/L; normal range: 5.0–35.0)	32 (21–52)	32 (20–49)	32 (22–59)	31 (20–52)	29 (17–46)	32 (20–55)	0.169
SCr ($\mu\text{mol/L}$; normal range: 41.0–81.0)	66.3 (55.2–79.9)	65.5 (54.8–82.7)	66.3 (55.5–78.1)	64.5 (54.6–77.0)	62.2 (53.4–77.9)	65.4 (55.1–76.9)	0.244
BUN (mmol/L; normal range: 2.9–8.2)	5.16 (3.69–8.49)	5.16 (3.50–8.91)	5.16 (3.80–7.75)	5.22 (3.74–8.68)	5.17 (3.57–12.15)	5.22 (3.80–8.35)	0.893
CRP (mg/L; normal range: 0.0–8.0)	18.41 (3.37–57.35)	22.00 (4.00–60.00)	17.00 (3.00–54.50)	6.92 (2.24–31.98)	7.00 (3.00–29.00)	7.00 (2.00–32.00)	0.648
D-dimer ≥ 1 ($\mu\text{g/L}$; normal range: 0.0–0.5)	136 (34%)	70 (35%)	66 (33%)	97 (27.2%)	35 (29.4%)	62 (26.1%)	0.501

(Continued to the next page)

Characteristics	1:1 matched			1:2 matched			P value
	Total (n=400)	Corticosteroids treatment (n=200)	Non-corticosteroids treatment (n=200)	Total (n=357)	Corticosteroids treatment (n=119)	Non-corticosteroids treatment (n=238)	
Comorbidity							
Hypertension	131 (32.3%)	65 (32.5%)	66 (33%)	119 (33.3%)	45 (37.8%)	74 (31.1%)	0.204
Diabetes	48 (12%)	22 (11%)	26 (13%)	53 (14.8%)	16 (13.4%)	37 (15.5%)	0.599
CHD	32 (8%)	13 (6.5%)	19 (9.5%)	35 (9.8%)	9 (7.6%)	26 (10.9%)	0.314
CPD	25 (6.3%)	15 (7.5%)	10 (5%)	22 (6.2%)	9 (7.6%)	13 (5.5%)	0.436
Malignant tumor	22 (5.5%)	10 (5%)	12 (6%)	18 (5.0%)	4 (3.4%)	14 (5.9%)	0.305
Disease severity status							
Mild/General	283 (70.8%)	142 (71%)	141 (70.5%)	315 (88.2%)	109 (91.6%)	206 (86.6%)	0.163
Severe/Critical	117 (29.3%)	58 (29%)	59 (29.5%)	42 (11.8%)	10 (8.4%)	32 (13.4%)	
Treatment							
MV	23 (5.8%)	12 (6%)	11 (5.5%)	2 (0.6%)	0 (0)	2 (0.8%)	0.554
Ig therapy	63 (15.8%)	32 (16%)	31 (15.5%)	22 (6.2%)	6 (5.0%)	16 (6.7%)	0.534
Antibacterial therapy	347 (86.8%)	172 (86%)	175 (87.5%)	279 (78.2%)	94 (79.0%)	185 (77.7%)	0.786
Antiflezzing therapy	113 (28.3%)	56 (28%)	57 (28.5%)	69 (19.3%)	20 (16.8%)	49 (20.6%)	0.394

Data are median (IQR) or *n* (%). *P* values were calculated by Mann-Whitney *U* test, Fisher's exact test or chi-square test, as appropriate. COVID-19: coronavirus disease 2019; NLR: neutrophil to lymphocyte ratio; LDH: lactate dehydrogenase; ALT: alanine aminotransferase; SCr: serum creatinine; BUN: blood urea nitrogen; CRP: C-reactive protein; CHD: chronic heart disease; CPD: chronic pulmonary disease; MV: mechanical ventilation. Ig: immunoglobulin. All the above patients' lung imaging was bilateral infiltration and antiviral treatment was given.

Table S2 Characteristics of the patients in corticosteroids treatment and non-corticosteroids treatment groups before propensity score match in 232 severe/critical patients with COVID-19

Characteristics	Total (n=232)	Corticosteroid s treatment (n=134)	Non-corticosteroids Treatment (n=98)	P value
Age, years	64 (53–71)	64 (53–71)	64 (54–70)	0.703
Sex		0.010*		
Female	89 (38.4%)	42 (31.3%)	47 (48.0%)	
Male	143 (61.6%)	92 (68.7%)	51 (52.0%)	
Symptoms on admission				
Cough	163 (70.2%)	95 (70.9%)	68 (69.4%)	0.804
Sputum	76 (32.8%)	52 (38.8%)	24 (24.5%)	0.022*
Dyspnea	95 (40.9%)	65 (48.5%)	30 (30.6%)	0.006*
Fatigue	127 (54.7%)	72 (53.7%)	55 (56.1%)	0.718
Fever	187 (80.6%)	112 (83.6%)	75 (76.5%)	0.180
Laboratory findings				
NLR	5.98 (3.21–10.80)	7.26 (3.87–13.37)	4.40 (2.79–8.41)	0.000*
Platelet ($\times 10^9/L$; normal range: 125–350)	199 (141–278)	186 (126–247)	228 (158–314)	0.001*
LDH (U/L; normal range: 109.0–245.0)	318 (231–431)	363 (284–513)	249 (193–342)	0.000*
ALT (U/L; normal range: 5.0–35.0)	35 (22–55)	37 (22–57)	34 (22–54)	0.653
SCr ($\mu\text{mol/L}$; normal range: 41.0–81.0)	68.1 (58.4–82.0)	72.6 (60.1–84.9)	65.1 (55.5–76.8)	0.005*
BUN (mmol/L; normal range: 2.9–8.2)	5.45 (3.79–8.23)	5.47 (3.78–8.14)	5.13 (3.78–8.38)	0.919
CRP (mg/L; normal range: 0.0–8.0)	43.10 (11.82–84.71)	59.14 (21.88–89.79)	26.52 (5.14–70.07)	0.000*
D-dimer ≥ 1 ($\mu\text{g/L}$; normal range: 0.0–0.5)	118 (50.9%)	70 (52.2%)	48 (49.0%)	0.624
Comorbidity				
Hypertension	93 (40.1%)	49 (36.6%)	44 (44.9%)	0.201
Diabetes	35 (15.1%)	14 (10.4%)	21 (21.4%)	0.021*
CHD	25 (10.8%)	13 (9.7%)	12 (12.2%)	0.537
CPD	18 (7.8%)	13 (9.7%)	5 (5.1%)	0.196
Malignant tumor	10 (4.3%)	5 (3.7%)	5 (5.1%)	0.857
Treatment				
MV	62 (26.7%)	50 (37.3%)	12 (12.2%)	0.000*
Ig therapy	92 (39.7%)	72 (53.7%)	20 (20.4%)	0.000*
Antibacterial therapy	201 (86.6%)	129 (96.3%)	72 (73.5%)	0.000*
Antiflezzing therapy	126 (54.3%)	85 (63.4%)	41 (41.8%)	0.001*
Outcomes				
In-hospital mortality	29 (12.5%)	24 (17.9%)	5 (5.1%)	0.004*
28-day mortality	15 (6.5%)	10 (7.5%)	5 (5.1%)	0.470
Duration of viral shedding after COVID-19 onset, days	24 (17–32)	24 (18–31)	25 (16–34)	0.908

Data are median (IQR) or n (%). P values were calculated by Mann-Whitney U test or chi-square test, as appropriate. COVID-19: coronavirus disease 2019; NLR: neutrophil to lymphocyte ratio; LDH: lactate dehydrogenase; ALT: alanine aminotransferase; SCr: serum creatinine; BUN: blood urea nitrogen; CRP: C-reactive protein; CHD: chronic heart disease; CPD: chronic pulmonary disease; MV: mechanical ventilation; Ig: immunoglobulin. All the above patients' lung imaging was bilateral infiltration and antiviral treatment was given. * $P < 0.05$

Table S3 Characteristics of the patients in corticosteroids treatment and non-corticosteroids treatment groups before propensity score match in 734 mild/general patients with COVID-19

Characteristics	Total (n=734)	Corticosteroids treatment (n=155)	Non-corticosteroids Treatment (n=579)	P value
Age, years	58 (48–66)	59 (46–68)	58 (48–66)	0.805
Sex		0.236		
Female	381 (51.9%)	87 (56.1%)	294 (50.8)	
Male	353 (48.1%)	68 (43.9%)	285 (49.2%)	
Symptoms on admission				
Cough	464 (63.2%)	104 (67.1%)	360 (62.2%)	0.259
Sputum	196 (26.7%)	43 (27.7%)	153 (26.4%)	0.742
Dyspnoea	247 (33.7%)	54 (34.8%)	193 (33.3%)	0.725
Fatigue	334 (45.5%)	73 (47.1%)	261 (45.1%)	0.654
Fever	568 (77.4%)	131 (17.8%)	437 (75.5%)	0.017*
Laboratory findings				
NLR	2.59 (1.72–4.04)	3.80 (2.49–5.63)	2.35 (1.66–3.53)	0.000*
Platelet ($\times 10^9/L$; normal range: 125–350)	224 (174–276)	216 (156–300)	225 (177–273)	0.441
LDH (U/L; normal range: 109.0–245.0)	195 (163–249)	226 (190–295)	189 (161–235)	0.000*
ALT (U/L; normal range: 5.0–35.0)	31 (20–53)	31 (20–48)	31 (20–55)	0.309
SCr ($\mu\text{mol/L}$; normal range: 41.0–81.0)	65.25 (54.88–79.10)	63.1 (53.4–82.6)	65.8 (55.2–78.5)	0.524
BUN (mmol/L; normal range: 2.9–8.2)	5.31 (3.99–8.96)	5.31 (3.48–11.88)	5.31 (4.10–8.53)	0.329
CRP (mg/L; normal range: 0.0–8.0)	4.33 (1.36–21.22)	13.90 (3.36–53.57)	3.90 (0.99–14.77)	0.060
D-dimer ≥ 1 ($\mu\text{g/L}$; normal range: 0.0–0.5)	167 (22.8%)	50 (32.3%)	117 (20.2%)	0.001
Comorbidity				
Hypertension	212 (28.9%)	51 (32.9%)	161 (27.8%)	0.214
Diabetes	105 (14.3%)	18 (11.6%)	87 (15.0%)	0.281
CHD	73 (9.9%)	9 (5.8%)	64 (11.1%)	0.053
CPD	39 (5.3%)	9 (5.8%)	30 (5.2%)	0.758
Malignant tumor	37 (5.0%)	7 (4.5%)	30 (5.2%)	0.737
Treatment				
Ig therapy	47 (6.4%)	20 (12.9%)	27 (4.7%)	0.000*
Antibiotic therapy	439 (59.8%)	131 (84.5%)	308 (53.2%)	0.000*
Antiflezzing therapy	122 (16.6%)	34 (21.9%)	88 (15.2%)	0.045*
Outcomes				
Duration of viral shedding after COVID-19 onset, days	29 (21–36)	25 (18–34)	30 (22–37)	0.000*

Data are median (IQR) or n (%). P values were calculated by Mann-Whitney U test or chi-square test, as appropriate. COVID-19: coronavirus disease 2019; NLR: neutrophil to lymphocyte ratio; LDH: lactate dehydrogenase; ALT: alanine aminotransferase; SCr: serum creatinine; BUN: blood urea nitrogen; CRP: reactive protein; CHD: chronic heart disease; CPD: chronic pulmonary disease; Ig: immunoglobulin. All the above patients' lung imaging was bilateral infiltration and antiviral treatment was given. * $P < 0.05$

Table S4 Characteristics of 96 severe/critical patients with COVID-19 after propensity score match (1:1 matched) in corticosteroids treatment and non-corticosteroids treatment groups

Characteristics	Total (n=96)	Corticosteroids treatment (n=48)	Non-corticosteroids treatment (n=48)	P value
Age, years	65 (55–72)	66 (55–71)	65 (53–72)	0.806
Sex		0.837		
Female	43 (44.8%)	21 (43.8%)	22 (45.8%)	
Male	53 (55.2%)	27 (56.3%)	26 (54.2%)	
Symptoms on admission				
Cough	72 (75%)	36 (75%)	36 (75%)	1.000
Sputum	35 (36.5%)	22 (45.8%)	13 (27.1%)	0.056
Dyspnea	37 (38.5%)	22 (45.8%)	15 (31.2%)	0.142
Fatigue	51 (53.1%)	24 (50.0%)	27 (56.3%)	0.539
Fever	78 (81.2%)	40 (83.3%)	38 (79.2%)	0.601
Laboratory findings				
NLR	5.86 (3.65–11.45)	6.52 (3.85–12.51)	5.16 (3.57–11.38)	0.433
Platelet ($\times 10^9/L$; normal range: 125–350)	205 (145–300)	197 (135–271)	205 (153–321)	0.446
LDH (U/L; normal range: 109.0–245.0)	306 (223–392)	315 (229–400)	289 (202–377)	0.238
ALT (U/L; normal range: 5.0–35.0)	34 (23–59)	36 (22–60)	33 (24–55)	0.657
SCr ($\mu\text{mol/L}$; normal range 41.0–81.0)	65.7 (55.7–76.9)	66.6 (57.3–81.9)	64.55 (53.03–73.63)	0.167
BUN (mmol/L; normal range: 2.9–8.2)	5.04 (3.99–7.49)	4.66 (3.61–7.57)	5.11 (4.07–7.49)	0.385
CRP (mg/L; normal range: 0.0–8.0)	44.27 (13.36–88.32)	64.39 (12.30–88.32)	37.23 (13.95–88.94)	0.803
D-dimer ≥ 1 ($\mu\text{g/L}$; normal range: 0.0–0.5)	55 (57.3%)	27 (56.3%)	28 (58.3%)	0.837
Comorbidity				
Hypertension	41 (42.7%)	17 (35.4%)	24 (50%)	0.149
Diabetes	12 (12.5%)	3 (6.3%)	9 (18.8%)	0.064
CHD	9 (9.4%)	3 (6.3%)	6 (12.5%)	0.486
CPD	8 (8.3%)	4 (8.3%)	4 (8.3%)	1.000
Malignant tumor	6 (6.3%)	2 (4.2%)	4 (8.3%)	0.677
Treatment				
MV	23 (24.0%)	12 (25.0%)	11 (22.9%)	0.811
Ig therapy	37 (38.5%)	17 (35.4%)	20 (41.7%)	0.529
Antibacterial therapy	92 (95.8%)	46 (95.8%)	46 (95.8%)	1.000
Antiflezzing therapy	55 (57.3%)	31 (64.6%)	24 (50.0%)	0.149

Data are median (IQR) or *n* (%). *P* values were calculated by Mann-Whitney *U* test, Fisher's exact test or chi-square test, as appropriate. COVID-19: coronavirus disease 2019; NLR: neutrophil to lymphocyte ratio; LDH: lactate dehydrogenase; ALT: alanine aminotransferase; SCr: serum creatinine; BUN: blood urea nitrogen; CRP: C-reactive protein; CHD: chronic heart disease; CPD: chronic pulmonary disease; MV: mechanical ventilation; Ig: immunoglobulin. All the above patients' lung imaging was bilateral infiltration and antiviral treatment was given.

Table S5 Characteristics of 280 general/mild patients with COVID-19 after propensity score match (1:1 matched and 1:2 matched) in corticosteroids treatment and non-corticosteroids treatment groups

Characteristics	1:1 matched			1:2 matched			
	Total (n=262)	Corticosteroids treatment (n=131)	Non-corticosteroids Treatment (n=131)	Total (n=288)	Corticosteroids treatment (n=96)	Non- corticosteroids treatment (n=192)	P value
Age, years	58 (46–67)	57 (45–66)	59 (49–69)	58 (47–66)	57 (45–66)	58 (49–67)	0.372
Sex							0.211
Female	138 (52.7%)	74 (56.5%)	64 (48.9%)	150 (52.1%)	55 (57.3%)	95 (49.5%)	
Male	124 (47.3%)	57 (43.5%)	67 (51.1%)	138 (47.9%)	41 (42.7%)	97 (50.5%)	
Symptoms on admission							
Cough	188 (71.8%)	90 (68.7%)	98 (74.8%)	202 (70.1%)	68 (70.8%)	134 (69.8%)	0.856
Sputum	82 (31.3%)	41 (31.3%)	41 (31.3%)	81 (28.1%)	22 (22.9%)	59 (30.7%)	0.164
Dyspnea	96 (36.6%)	47 (35.9%)	49 (37.4%)	98 (34.0%)	32 (33.3%)	66 (34.4%)	0.860
Fatigue	123 (46.9%)	62 (47.3%)	61 (46.6%)	140 (48.6%)	50 (52.1%)	90 (46.9%)	0.404
Fever	210 (80.2%)	111 (84.7%)	99 (75.6%)	228 (79.2%)	81 (84.4%)	147 (76.6%)	0.124
Laboratory findings							
NLR	3.24 (2.23–4.62)	3.37 (2.30–4.99)	3.04 (2.15–4.45)	2.74 (1.99–3.80)	2.98 (2.05–4.36)	2.63 (1.96–3.68)	0.169
Platelet ($\times 10^9/L$; normal range: 125–350)	220 (164–287)	213 (156–294)	225 (177–285)	224 (168–279)	200 (156–267)	231 (176–283)	0.095
LDH (U/L; normal range: 109.0–245.0)	218 (182–283)	211 (187–276)	222 (178–297)	202 (176–253)	201 (177–240)	205 (176–265)	0.351
ALT (U/L; normal range: 5.0–35.0)	31 (21–49)	29 (19–46)	32 (22–56)	31 (19–52)	27 (16–46)	31 (20–57)	0.053
SCr ($\mu\text{mol/L}$; normal range: 41.0–81.0)	64.0 (54.0–78.9)	62.0 (53.4–79.8)	68.1 (54.4–77.5)	63.6 (54.1–77.9)	61.5 (53.5–78.7)	65.5 (54.4–77.0)	0.352
BUN (mmol/L; normal range: 2.9–8.2)	5.15 (3.65–8.84)	5.17 (3.47–130.60)	5.13 (3.84–7.40)	5.07 (3.67–8.56)	4.83 (3.50–64.19)	5.09 (3.77–8.16)	0.757
CRP (mg/L; normal Range: 0.0–8.0)	8.57 (2.97–35.58)	8.53 (2.85–34.12)	8.60 (3.01–37.38)	5.00 (1.25–24.00)	6.00 (2.25–28.00)	5.00 (1.00–23.75)	0.562
D-dimer ≥ 1 ($\mu\text{g/L}$; normal range: 0.0–0.5)	72 (27.5%)	39 (29.8%)	33 (25.2%)	67 (23.3%)	26 (27.1%)	41 (21.4%)	0.278

(Continued to the next page)

(Continued from the last page)

Characteristics	1:1 matched			1:2 matched			P value
	Total (n=262)	Corticosteroids treatment (n=131)	Non-corticosteroids Treatment (n=131)	Total (n=288)	Corticosteroids treatment (n=96)	Non- corticosteroids treatment (n=192)	
Comorbidity							
Hypertension	79 (30.2%)	44 (33.6%)	35 (26.7%)	81 (28.1%)	28 (29.2%)	53 (27.6%)	0.781
Diabetes	36 (13.7%)	13 (9.9%)	23 (17.6%)	39 (13.5%)	10 (10.4%)	29 (15.1%)	0.273
CHD	17 (6.5%)	6 (4.6%)	11 (8.4%)	30 (10.4%)	10 (10.4%)	20 (10.4%)	1.000
CPD	17 (6.5%)	9 (6.9%)	8 (6.1%)	15 (5.2%)	4 (4.2%)	11 (5.7%)	0.574
Malignant tumor	11 (4.2%)	6 (4.6%)	5 (3.8%)	13 (4.5%)	5 (5.2%)	8 (4.2%)	0.920
Treatment							
Ig therapy	20 (7.6%)	10 (7.6%)	10 (7.6%)	14 (4.9%)	4 (4.2%)	10 (5.2%)	0.923
Antibacterial therapy	217 (82.8%)	108 (82.4%)	109 (83.2%)	225 (78.1%)	75 (78.1%)	150 (78.1%)	1.000
Antiflezzing therapy	47 (17.9%)	24 (18.3%)	23 (17.6%)	44 (15.3%)	13 (13.5%)	31 (16.1%)	0.563

Data are median (IQR) or n (%). P values were calculated by Mann-Whitney U test, Fisher's exact test or chi-square test, as appropriate. COVID-19: coronavirus disease 2019; NLR: neutrophil to lymphocyte ratio; LDH: lactate dehydrogenase; ALT: alanine aminotransferase; SCr: serum creatinine; BUN: blood urea nitrogen; CRP: C-reactive protein; CHD: chronic heart disease; CPD: chronic pulmonary disease; Ig: immunoglobulin. All the above patients' lung imaging was bilateral infiltration and antiviral treatment was given.