

**Table S1** Comparison of different algorithms

Algorithms/performance	Cohorts	AUC	F1 score	Precisions	Recall	Specificity
Logistic regression with LASSO	Development cohort	0.841	0.571	0.400	1.000	0.727
	Validation cohort	0.938	0.667	0.500	1.000	0.778
Logistic regression with ridge regularization	Development cohort	0.796	0.462	0.333	0.750	0.727
	Validation cohort	0.864	0.571	0.400	1.000	0.667
Decision tree	Development cohort	0.580	0.286	0.333	0.250	0.909
	Validation cohort	0.500	0.000	0.000	0.000	1.000
Adaboost algorithms	Development cohort	0.500	0.000	0.000	0.000	0.818
	Validation cohort	0.790	0.222	0.333	0.167	0.926

AUC, area under the ROC curve; ROC, receiver operating characteristic; LASSO, least absolute shrinkage and selection operator.

**Table S2** Demographics, baseline, and clinical characteristics of 33 patients in the validation cohort admitted to PLAGH (Feb. 10–Feb. 26, 2020) with an epidemiological history of exposure to COVID-19

Characteristics	All patients	N-S-COVID-19-P cases	S-COVID-19-P cases	P value
Cohort, n	33	27	6	–
Age, years, median (IQR)	38.0 (31.0–45.0)	37.0 (29.5–42.0)	43.0 (39.5–60.0)	0.035
Gender, n (%)				
Male	16 (48.5)	13 (48.1)	3 (50.0)	–
Female	17 (51.5)	14 (51.9)	3 (50.0)	–
DOA, median (IQR)	2.0 (1.0–4.0)	2.0 (1.0–5.5)	1.0 (1.0–1.75)	0.165
Comorbidities, n (%)				
Hypertension	0 (0.0)	0 (0.0)	0 (0.0)	–
Diabetes	0 (0.0)	0 (0.0)	0 (0.0)	–
Cardiovascular disease	0 (0.0)	0 (0.0)	0 (0.0)	–
Chronic obstructive pulmonary disease	0 (0.0)	0 (0.0)	0 (0.0)	–
Malignancy	1 (3.0)	1 (3.7)	0 (0.0)	–
Chronic kidney disease	0 (0.0)	0 (0.0)	0 (0.0)	–
Chronic liver disease	0 (0.0)	0 (0.0)	0 (0.0)	–
Vital sign on admission				
HR, n/min, median (IQR)	100.0 (92.0–109.0)	100.0 (91.0–106.5)	105.5 (97.5–121.0)	0.176
DIAS_BP, mmHg, median (IQR)	82.0 (78.0–87.0)	83.0 (78.0–88.5)	80.0 (73.3–80.0)	0.175
SYS_BP, mmHg, median (IQR)	131.0 (123.0–141.0)	130.0 (120.0–141.5)	133.5 (130.0–134.8)	0.608
Fever, n (%)	23 (69.7)	17 (63.0)	6 (100.0)	0.145
Highest TEM, °C, median (IQR)	37.4 (36.8–37.8)	37.3 (36.8–37.7)	38.7 (38.5–38.9)	<0.001
<37.1, n (%)	10 (30.3)	10 (37.0)	0 (0.0)	0.1445
37.1–38.0, n (%)	18 (54.5)	17 (63.0)	1 (16.7)	0.07

**Table S2** (continued)

**Table S2** (continued)

Characteristics	All patients	N-S-COVID-19-P cases	S-COVID-19-P cases	P value
38.1–39.0, n (%)	5 (15.2)	0 (0.0)	5 (83.3)	<0.001
>39.0, n (%)	0 (0.0)	0 (0.0)	0 (0.0)	–
Other symptoms on admission, n (%)				
Cough	13 (39.4)	13 (48.1)	0 (0.0)	0.06
Shortness of breath	3 (9.1)	3 (11.1)	0 (0.0)	–
Muscle ache	8 (24.2)	6 (22.2)	2 (33.3)	0.616
Headache	9 (27.3)	6 (22.2)	3 (50.0)	0.309
Sore throat	10 (30.3)	9 (33.3)	1 (16.7)	0.64
Rhinorrhea	1 (3.0)	1 (3.7)	0 (0.0)	–
Diarrhea	5 (15.2)	5 (18.5)	0 (0.0)	0.556
Nausea	7 (21.2)	4 (14.8)	3 (50.0)	0.093
Vomiting	3 (9.1)	2 (7.4)	1 (16.7)	0.464
Chills	7 (21.2)	3 (11.1)	4 (66.7)	0.011
Shivering	3 (9.1)	2 (7.4)	1 (16.7)	0.464
Expectoration	8 (24.2)	8 (29.6)	0 (0.0)	0.296
Abdominal pain	1 (3.0)	1 (3.7)	0 (0.0)	–
Fatigue	9 (27.3)	7 (25.9)	2 (33.3)	–
Palpitation	1 (3.0)	1 (3.7)	0 (0.0)	–

Continuous variables are expressed as median with interquartile range (IQR) and were compared with the Mann-Whitney U test; categorical variables are expressed as absolute (n) and relative (%) frequency and were compared by  $\chi^2$  test or Fisher's exact test. A two-sided  $\alpha$  value <0.05 was considered statistically significant. PLAGH, People's Liberation Army General Hospital; COVID-19, 2019 novel coronavirus disease; S-COVID-19-P, suspected COVID-19 pneumonia; N-S-COVID-19-P, non-suspected COVID-19 pneumonia; DOA, days from illness onset to first admission; HR, heart rate; DIAS\_BP, diastolic blood pressure; SYS\_BP, systolic blood pressure; TEM, temperature.

**Table S3** Laboratory results and CT findings of 33 patients in the validation cohort admitted to PLAGH (Feb. 10–Feb. 26, 2020) with an epidemiological history of exposure to COVID-19

Parameters	All patients	N-S-COVID-19-P cases	S-COVID-19-P cases	P value
Cohort, n	33	27	6	–
Blood routine values				
WBC ( $\times 10^9$ per L; normal range: 3.5–10.0)	6.78 (5.36–8.62)	6.56 (5.31–7.79)	8.89 (7.95–9.82)	0.025
Increased	3 (9.1)	1 (3.7)	2 (33.3)	0.078
Decreased	0 (0.0)	0 (0.0)	0 (0.0)	–
RBC ( $\times 10^{12}$ per L; normal range: male 4.3–5.9, female 3.9–5.2)	4.64 (4.16–5.05)	4.74 (4.33–5.20)	4.34 (4.12–4.61)	0.08
Decreased	2 (6.1)	1 (3.7)	1 (16.7)	0.335

**Table S3** (continued)

**Table S3** (continued)

Parameters	All patients	N-S-COVID-19-P cases	S-COVID-19-P cases	P value
HGB (g/L; normal range: male 137.0–179.0, female 116.0–155.0)	142.0 (130.0–151.0)	143.0 (133.0–152.5)	131.5 (128.0–138.0)	0.088
Decreased	2 (6.1)	1 (3.7)	1 (16.7)	0.335
HCT (normal range: male 0.4–0.52, female 0.37–0.47)	0.41 (0.37–0.44)	0.42 (0.38–0.45)	0.37 (0.37–0.38)	0.059
Increased	1 (3.0)	1 (3.7)	0 (0.0)	–
Decreased	13 (39.4)	8 (29.6)	5 (83.3)	0.025
PLT ( $\times 10^9$ per L; normal range: 100.0–300.0)	231.0 (200.0–261.0)	231.0 (201.5–276.5)	234.0 (206.8–242.5)	0.834
Decreased	1 (3.0)	1 (3.7)	0 (0.0)	–
LYMPH% (0.2–0.4)	0.19 (0.14–0.29)	0.22 (0.17–0.30)	0.11 (0.09–0.13)	0.001
Increased	1 (3.0)	1 (3.7)	0 (0.0)	–
Decreased	18 (54.5)	12 (44.4)	6 (100.0)	0.021
LYMPH# ( $\times 10^9$ per L; normal range: 1.0–4.0)	1.36 (1.01–1.87)	1.46 (1.21–1.96)	1.00 (0.98–1.01)	0.005
Increased	0 (0.0)	0 (0.0)	0 (0.0)	–
Decreased	7 (21.2)	4 (14.8)	3 (50.0)	0.093
NEUT% (0.5–0.7)	0.73 (0.59–0.78)	0.71 (0.58–0.76)	0.78 (0.75–0.85)	0.057
Increased	20 (60.6)	15 (55.6)	5 (83.8)	0.364
Decreased	3 (9.1)	3 (11.1)	0 (0.0)	–
NEUT# ( $\times 10^9$ per L; normal range 2.0–7.0)	4.76 (3.07–7.01)	4.20 (3.02–5.78)	7.29 (6.07–8.15)	0.031
Increased	9 (27.3)	5 (18.5)	4 (66.7)	0.034
Decreased	0 (0.0)	0 (0.0)	0 (0.0)	–
EO% (0.01–0.05)	0.008 (0.003–0.025)	0.008 (0.004–0.028)	0.001 (0.0003–0.014)	0.129
Increased	4 (12.1)	3 (11.1)	1 (16.7)	–
EO# ( $\times 10^9$ per L; normal range: 0.05–0.3)	0.05 (0.02–0.16)	0.05 (0.03–0.16)	0.01 (0.003–0.11)	0.146
Increased	4 (12.1)	3 (11.1)	1 (16.7)	–
MONO% (0.03–0.08)	0.06 (0.04–0.08)	0.06 (0.04–0.07)	0.07 (0.06–0.10)	0.154
Increased	9 (27.3)	6 (22.2)	3 (50.0)	0.309
MONO# ( $\times 10^9$ per L; normal range: 0.12–0.8)	0.38 (0.31–0.46)	0.36 (0.29–0.44)	0.61 (0.55–0.77)	<0.001
Increased	2 (6.1)	0 (0.0)	2 (33.3)	0.028
BASO% (0–0.01)	0.003 (0.002–0.006)	0.003 (0.002–0.007)	0.003 (0.001–0.004)	0.422
Increased	2 (6.1)	2 (7.4)	0 (0.0)	–

**Table S3** (continued)

**Table S3** (continued)

Parameters	All patients	N-S-COVID-19-P cases	S-COVID-19-P cases	P value
BASO# ( $\times 10^9$ per L; normal range: 0–0.1)	0.02 (0.01–0.04)	0.02 (0.01–0.04)	0.02 (0.01–0.04)	0.91
Increased	0 (0.0)	0 (0.0)	0 (0.0)	–
MCV (fl; normal range: 80–100)	87.10 (85.60–89.40)	87.10 (85.20–89.65)	87.45 (85.80–88.72)	0.944
MCH (pg; normal range: 27–34)	30.50 (29.50–31.10)	29.90 (29.45–31.05)	30.80 (30.52–31.90)	0.315
MCHC (g/L; normal range: 320–360)	348.0 (340.0–354.0)	347.0 (338.0–353.0)	353.5 (347.0–360.0)	0.215
RDW-CV (%; normal range: <14.5%)	12.00 (11.80–12.70)	12.00 (11.80–12.60)	12.25 (11.60–14.03)	0.623
Increased	2 (6.1)	0 (0.0)	2 (33.3)	0.028
MPV (fl; normal range: 6.8–12.8)	9.90 (9.60–10.90)	9.90 (9.60–10.90)	10.10 (9.68–10.75)	0.743
<b>Infection-related biomarkers</b>				
CRP (mg/L; normal range 0.0–5.0)	0.10 (0.10–0.95)	0.10 (0.10–0.19)	7.56 (2.55–8.41)	<0.001
Increased	9 (27.3)	4 (14.8)	5 (83.3)	0.003
IL-6 (pg/mL; normal range: 0.5–9)	1.50 (1.50–20.54)	1.50 (1.50–1.59)	26.79 (21.94–79.94)	<0.001
Increased	10 (30.3)	4 (14.8)	6 (100.0)	<0.001
<b>CT findings</b>				
Positive findings	10 (30.3)	4 (14.8)	6 (100.0)	<0.001
MMPIC	6 (18.2)	4 (14.8)	2 (33.3)	0.295
OEZ	0 (0.0)	0 (0.0)	0 (0.0)	–
MMGGO	1 (3.0)	0 (0.0)	1 (16.7)	0.182
MIS	4 (12.1)	0 (0.0)	4 (100.0)	<0.001
Pulmonary consolidation	3 (9.1)	0 (0.0)	3 (50.0)	0.004
Pleural effusion	1 (3.0)	0 (0.0)	1 (16.7)	0.182
Other virus infections	0 (0.0)	0 (0.0)	0 (0.0)	–
Influenza A	0 (0.0)	0 (0.0)	0 (0.0)	–
Influenza B	0 (0.0)	0 (0.0)	0 (0.0)	–

Continuous variables are expressed as median with interquartile range (IQR) and were compared with the Mann-Whitney U test; categorical variables are expressed as absolute (n) and relative (%) frequency and compared by  $\chi^2$  test or Fisher's exact test. A two-sided  $\alpha$  value <0.05 was considered statistically significant. Increased means over the upper limit of the normal range and decreased means below the lower limit of the normal range. CT, computed tomography; PLAGH, People's Liberation Army General Hospital; COVID-19, 2019 novel coronavirus disease; S-COVID-19-P, suspected COVID-19 pneumonia; N-S-COVID-19-P, non-suspected COVID-19 pneumonia; WBC, white blood cell count; RBC, red blood cell count; HGB, hemoglobin; HCT, hematocrit; PLT, platelet count; LYMPH%, lymphocyte ratio; LYMPH#, lymphocyte count; NEUT%, neutrophil ratio; NEUT#, neutrophil count; EO%, eosinophil ratio; EO#, eosinophil count; MONO%, monocyte ratio; MONO#, monocyte count; BASO%, basophil ratio; BASO#, basophil count; MCV, mean corpuscular volume; MCH, mean corpuscular hemoglobin content; MCHC, mean corpuscular hemoglobin concentration; RDW-CV, red blood cell volume distribution width; MPV, mean platelet volume; CRP, C-reactive protein; IL-6, interleukin-6; MMPIC, multiple macular patches and interstitial changes; OEZ, obvious in extra-pulmonary zone; MMGGO, multiple mottling and ground-glass opacity; MIS, multiple infiltrative shadow.

**Table S4** Candidate features and univariable association with S-COVID-19-P

Candidate features	Association and weight
Age	0.1115441
IL-6	0.087957222
SYS_BP	0.086830321
MONO%	0.067880575
Fever class	0.056941687
Headache	0.052507708
DIAS_BP	0.039076925
HR	0.035209084
MCH	0.01938761
TEM	0.0181481
Fever	0.014057313
Sore throat	0.010200146
WBC	0
LYMPH%	0
LYMPH#	0
Chills	0
MONO#	0
EO%	0
BASO%	0
NEUT%	0
HCT	0
MCV	0
MCHC	0
RDW-CV	0
MPV	0
CRP	0
NEUT#	0
DOA	0
Rhinorrhea	0
Muscle ache	0
HGB	0
Gender	0
Diarrhea	0
Cough	0

**Table S4** (continued)

**Table S4** (continued)

Candidate features	Association and weight
Palpitation	0
RBC	0
Abdominal pain	0
Vomiting	0
Nausea	0
Expectoration	0
BASO#	-0.004355896
EO#	-0.004700708
Fatigue	-0.00472086
Shiver	-0.006379747
Shortness of breath	-0.006658011
PLT	-0.048908566

S-COVID-19-P, suspected COVID-19 pneumonia; IL-6, interleukin-6; SYS\_BP, systolic blood pressure; MONO%, monocyte ratio; DIAS\_BP, diastolic blood pressure; HR, heart rate; MCH, mean corpuscular hemoglobin content; TEM, temperature; WBC, white blood cell count; LYMPH%, lymphocyte ratio; LYMPH#, lymphocyte count; MONO#, monocyte count; EO%, eosinophil ratio; BASO%, basophil ratio; NEUT%, neutrophil ratio; HCT, hematocrit; MCV, mean corpuscular volume; MCHC, mean corpuscular hemoglobin concentration; RDW-CV, red blood cell volume distribution width; MPV, mean platelet volume; CRP, C-reactive protein; NEUT#, neutrophil count; DOA, days from illness onset to first admission; HGB, hemoglobin; RBC, red blood cell count; BASO#, basophil count; EO#, eosinophil count; PLT, platelet count.