

APPENDIX I. Presenting characteristics between non-severe and severe patients infected with COVID-19*

	Clinical category		P value
	Non-severe (n=180)	Severe (n=9)	
Baseline characteristics			
Age (years)	44 ± 14	52.22 ± 8	0.067
Gender			1.000
Female	85 (47.2%)	4 (44.4%)	
Male	95 (52.8%)	5 (55.6%)	
Contact history			1.000
Close	52 (35.1%)	2 (33.3%)	
Direct	96 (64.9%)	4 (66.7%)	
Co-morbidities			
Hypertension	31 (17.2%)	3 (33.3%)	0.433
Cardiovascular disease	5 (2.8%)	0	1.000
Diabetes	8 (4.4%)	1 (11.1%)	0.909
Malignancy	0	1 (11.1%)	0.033
COPD	1 (0.6%)	0	1.000
Chronic liver disease	6 (3.3%)	1 (11.1%)	0.763
Chronic kidney disease	1 (0.6%)	0	1.000
Signs and symptoms			
Fever	153 (86.0%)	8 (88.9%)	1.000
Fatigue	64 (35.6%)	4 (44.4%)	0.852
Cough	105 (58.3%)	8 (88.9%)	0.140
Myalgia	35 (19.4%)	0	0.305
Headache	18 (10.0%)	1 (11.1%)	1.000
Nausea	16 (8.9%)	2 (22.2%)	0.454
Diarrhoea	21 (11.7%)	4 (44.4%)	0.020
Dyspnoea	14 (7.8%)	3 (33.3%)	0.044
Celiagia	4 (2.2%)	1 (11.1%)	0.577
Heart rate (bpm)	93.15 ± 13.38	93.67 ± 12.12	0.911
Respiratory rate (rpm)	19.53 ± 1.38	20.78 ± 1.20	0.009
Body temperature (°C)	37.83 ± 0.84	38.01 ± 0.82	0.539
Laboratory and radiological findings			
Leucocyte status			0.263
Leukocytosis	3 (1.7%)	0	
Normal	123 (68.3%)	4 (44.4%)	
Leukopenia	54 (30.0%)	5 (55.6%)	
Lymphocyte status			0.192
Lymphocytosis	1 (0.6%)	0	
Normal	144 (80.0%)	5 (55.6%)	
Lymphocytopenia	35 (19.4%)	4 (44.4%)	
Neutrophil status			0.267
Neutrophilia	4 (2.2%)	1 (11.1%)	
Normal	152 (84.4%)	7 (77.8%)	
Neutropenia	24 (13.3%)	1 (11.1%)	
SaO ₂			<0.001
Normal	175 (97.2%)	4 (44.4%)	
Hypoxia	5 (2.8%)	5 (55.6%)	
Lesion status			0.620
Single lesion	19 (11.0%)	0	
Multiple lesion	153 (89.0%)	9 (100%)	
Lobe involvement			
Right upper	1.24 ± 1.21	2.33 ± 0.87	0.008
Right middle	0.91 ± 0.84	1.67 ± 0.71	0.009
Right lower	2.59 ± 1.97	4.56 ± 0.73	0.003
Left upper	1.72 ± 1.80	3.44 ± 1.74	0.006
Left lower	2.52 ± 1.94	4.22 ± 1.39	0.010
mGGO-C	151 (83.9%)	9 (100%)	0.404
Round shape	123 (68.3%)	4 (44.4%)	0.260
Other shape	143 (79.4%)	9 (100%)	0.277
Paving stone	50 (27.8%)	2 (22.2%)	1.000
Grid-like shadow	105 (58.3%)	8 (88.9%)	0.140
Subpleural distribution	163 (90.6%)	9 (100%)	0.712
Diffuse distribution	28 (15.6%)	5 (55.6%)	0.008
Pleural effusion	1 (0.6%)	0	1.000

Abbreviations: bpm = beats per minute; COPD = chronic obstructive pulmonary disease; COVID-19 = coronavirus disease 2019; mGGO-C = mixed ground-glass opacity with consolidation; rpm = breaths per minute; SaO₂ = oxygen saturation

* Data are shown as mean ± standard deviation or No. (%)

APPENDIX 2. Radiological findings of patients infected with COVID-19 regarding haematological abnormalities*

	Leucocyte status		P value	Lymphocyte status		P value
	Leukopenia (n=59)	Normal (n=127)		Lymphocytopenia (n=39)	Normal (n=149)	
Lesion status			0.179			1.000
Single lesion	3 (5.3%)	16 (13.2%)		4 (10.5%)	15 (10.6%)	
Multiple lesion	54 (94.7%)	105 (86.8%)		34 (89.5%)	127 (89.4%)	
Lobe involvement						
Right upper	1.34 ± 1.21	1.27 ± 1.22	0.710	1.49 ± 1.34	1.23 ± 1.17	0.235
Right middle	1.02 ± 0.84	0.89 ± 0.86	0.344	1.10 ± 0.82	0.89 ± 0.86	0.171
Right lower	3.14 ± 2.00	2.50 ± 1.94	0.040	2.79 ± 1.84	2.64 ± 2.01	0.672
Left upper	2.14 ± 1.93	1.65 ± 1.78	0.090	2.38 ± 1.91	1.64 ± 1.79	0.023
Left lower	3.29 ± 2.00	2.28 ± 1.86	0.001	2.95 ± 1.99	2.50 ± 1.94	0.205
mGGO-C	52 (88.1%)	106 (83.5%)	0.543	31 (79.5%)	128 (85.9%)	0.460
Round shape	37 (62.7%)	88 (69.3%)	0.470	18 (46.2%)	109 (73.2%)	0.003
Other shape	52 (88.1%)	98 (77.2%)	0.118	35 (89.7%)	116 (77.9%)	0.151
Paving stone	18 (30.5%)	32 (25.2%)	0.560	8 (20.5%)	44 (29.5%)	0.358
Grid-like shadow	44 (74.6%)	67 (52.8%)	0.008	28 (71.8%)	84 (56.4%)	0.118
Subpleural distribution	55 (93.2%)	114 (89.8%)	0.626	37 (94.9%)	134 (89.9%)	0.520
Diffuse distribution	15 (25.4%)	17 (13.4%)	0.069	11 (28.2%)	21 (14.1%)	0.065
Pleural effusion	0	1 (0.8%)	1.000	0	1 (0.7%)	1.000

Abbreviations: COVID-19 = coronavirus disease 2019; mGGO-C = mixed ground-glass opacity with consolidation

* Data are shown as No. (%) or mean ± standard deviation

APPENDIX 3. Co-occurrence between mGGO-C and other radiological findings*

Postoperative day	Mixed ground-glass opacity with consolidation		P value
	No (n=29)	Yes (n=160)	
Lesion status			0.001
Single lesion	7 (33.3%)	12 (7.5%)	
Multiple lesion	14 (66.7%)	148 (92.5%)	
Lobe involvement			
Right upper	0.28 ± 0.59	1.48 ± 1.21	<0.001
Right middle	0.41 ± 0.57	1.04 ± 0.86	<0.001
Right lower	1.17 ± 1.61	2.96 ± 1.91	<0.001
Left upper	0.55 ± 1.09	2.02 ± 1.85	<0.001
Left lower	0.97 ± 1.50	2.90 ± 1.87	<0.001
Round shape	14 (48.3%)	113 (70.6%)	0.032
Other shape	13 (44.8%)	139 (86.9%)	<0.001
Paving stone	3 (10.3%)	49 (30.6%)	0.043
Grid-like shadow	8 (27.6%)	105 (65.6%)	<0.001
Subpleural distribution	15 (51.7%)	157 (98.1%)	<0.001
Diffuse distribution	0	33 (20.6%)	0.015
Pleural effusion	0	1 (0.6%)	1.000

Abbreviations: COVID-19 = coronavirus disease 2019; mGGO-C = mixed ground-glass opacity with consolidation

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APPENDIX 4. Spatial differences of patients infected with COVID-19 regarding epidemiologic, clinical, laboratory, and radiological characteristics*

	Heavy epidemic area (Wuhan and Zhejiang)		P value
	Inside (n=146)	Outside (n=43)	
Baseline characteristics			
Age (years)	44 ± 14	44 ± 14	0.868
Gender			0.099
Female	74 (50.7%)	15 (34.9%)	
Male	72 (49.3%)	28 (65.1%)	
Contact history			1.000
Close	43 (35.2%)	11 (34.4%)	
Direct	79 (64.8%)	21 (65.6%)	
Clinical category			0.214
Non-severe	137 (93.8%)	43 (100%)	
Severe	9 (6.2%)	0	
Co-morbidities			
Hypertension	26 (17.8%)	8 (18.6%)	1.000
Cardiovascular disease	2 (1.4%)	3 (7.0%)	0.141
Diabetes	8 (5.5%)	1 (2.3%)	0.655
Malignancy	1 (0.7%)	0	1.000
COPD	0	1 (2.3%)	0.515
Chronic liver disease	7 (4.8%)	0	0.315
Chronic kidney disease	1 (0.7%)	0	1.000
Signs and symptoms			
Fever	125 (85.6%)	36 (83.7%)	0.918
Fatigue	58 (39.7%)	10 (23.3%)	0.072
Cough	91 (62.3%)	22 (51.2%)	0.256
Myalgia	29 (19.9%)	6 (14.0%)	0.513
Headache	15 (10.3%)	4 (9.3%)	1.000
Nausea	16 (11.0%)	2 (4.7%)	0.346
Diarrhoea	22 (15.1%)	3 (7.0%)	0.263
Dyspnoea	17 (11.6%)	0	0.041
Celialgia	4 (2.7%)	1 (2.3%)	1.000
Heart rate (bpm)	92.35 ± 13.16	98.09 ± 13.18	0.055
Respiratory rate (rpm)	19.65 ± 1.43	19.14 ± 1.03	0.194
Body temperature (°C)	37.90 ± 0.80	37.63 ± 0.94	0.070
Laboratory and radiological findings			
Leucocyte status			0.175
Leukocytosis	1 (0.7%)	2 (4.7%)	
Normal	98 (67.1%)	29 (67.4%)	
Leukopenia	47 (32.2%)	12 (27.9%)	
Lymphocyte status			0.033
Lymphocytosis	0	1 (2.3%)	
Normal	120 (82.2%)	29 (67.4%)	
Lymphocytopenia	26 (17.8%)	13 (30.2%)	
Neutrophil status			0.468
Neutrophilia	3 (2.1%)	2 (4.7%)	
Normal	122 (83.6%)	37 (86.0%)	
Neutropenia	21 (14.4%)	4 (9.3%)	
SaO ₂			0.169
Normal	136 (93.2%)	43 (100%)	
Hypoxia	10 (6.8%)	0	
Lesion status			0.015
Single lesion	10 (7.1%)	9 (22.0%)	
Multiple lesion	130 (92.9%)	32 (78.0%)	
Lobe involvement			
Right upper	1.36 ± 1.21	1.07 ± 1.22	0.175
Right middle	1.03 ± 0.86	0.63 ± 0.76	0.006
Right lower	2.82 ± 1.93	2.26 ± 2.07	0.102
Left upper	1.96 ± 1.86	1.26 ± 1.65	0.027
Left lower	2.73 ± 1.91	2.16 ± 2.03	0.092
mGGO-C	128 (87.7%)	32 (74.4%)	0.060
Round shape	106 (72.6%)	21 (48.8%)	0.006
Other shape	117 (80.1%)	35 (81.4%)	1.000
Paving stone	40 (27.4%)	12 (27.9%)	1.000
Grid-like shadow	89 (61.0%)	24 (55.8%)	0.669
Subpleural distribution	135 (92.5%)	37 (86.0%)	0.322
Diffuse distribution	23 (15.8%)	10 (23.3%)	0.363
Pleural effusion	0	1 (2.3%)	0.515

Abbreviations: bpm = beats per minute; COPD = chronic obstructive pulmonary disease; COVID-19 = coronavirus disease 2019; mGGO-C = mixed ground-glass opacity with consolidation; rpm = breaths per minute; SaO₂ = oxygen saturation

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APPENDIX 5. Temporal differences of patients infected with COVID-19 regarding epidemiologic, clinical, laboratory, and radiological characteristics*

	Wuhan lockdown date cut-off		P value
	After (n=102)	Before (n=87)	
Baseline characteristics			
Age (years)	44.05 ± 12.52	43.87 ± 15.39	0.931
Gender			0.668
Female	50 (49.0%)	39 (44.8%)	
Male	52 (51.0%)	48 (55.2%)	
Contact history			1.000
Close	28 (35.4%)	26 (34.7%)	
Direct	51 (64.6%)	49 (65.3%)	
Clinical category			0.735
Non-severe	98 (96.1%)	82 (94.3%)	
Severe	4 (3.9%)	5 (5.7%)	
Co-morbidities			
Hypertension	16 (15.7%)	18 (20.7%)	0.482
Cardiovascular disease	3 (2.9%)	2 (2.3%)	1.000
Diabetes	5 (4.9%)	4 (4.6%)	1.000
Malignancy	0	1 (1.1%)	0.936
COPD	1 (1.0%)	0	1.000
Chronic liver disease	2 (2.0%)	5 (5.7%)	0.323
Chronic kidney disease	0	1 (1.1%)	0.936
Signs and symptoms			
Fever	87 (85.3%)	74 (85.1%)	1.000
Fatigue	34 (33.3%)	34 (39.1%)	0.504
Cough	52 (51.0%)	61 (70.1%)	0.012
Myalgia	16 (15.7%)	19 (21.8%)	0.369
Headache	12 (11.8%)	7 (8.0%)	0.545
Nausea	4 (3.9%)	14 (16.1%)	0.010
Diarrhoea	14 (13.7%)	11 (12.6%)	0.997
Dyspnoea	2 (2.0%)	15 (17.2%)	0.001
Celiagia	4 (3.9%)	1 (1.1%)	0.466
Heart rate (bpm)	94.84 ± 13.50	91.42 ± 12.89	0.104
Respiratory rate (rpm)	19.68 ± 1.52	19.53 ± 1.26	0.493
Body temperature (°C)	37.82 ± 0.76	37.87 ± 0.92	0.692
Laboratory and radiological findings			
Leucocyte status			0.153
Leukocytosis	3 (2.9%)	0	
Normal	71 (69.6%)	56 (64.4%)	
Leukopenia	28 (27.5%)	31 (35.6%)	
Lymphocyte status			0.554
Lymphocytosis	0	1 (1.1%)	
Normal	81 (79.4%)	68 (78.2%)	
Lymphocytopenia	21 (20.6%)	18 (20.7%)	
Neutrophil status			0.301
Neutrophilia	4 (3.9%)	1 (1.1%)	
Normal	87 (85.3%)	72 (82.8%)	
Neutropenia	11 (10.8%)	14 (16.1%)	
SaO ₂			0.946
Normal	96 (94.1%)	83 (95.4%)	
Hypoxia	6 (5.9%)	4 (4.6%)	
Lesion status			0.740
Single lesion	9 (9.3%)	10 (11.9%)	
Multiple lesion	88 (90.7%)	74 (88.1%)	
Lobe involvement			
Right upper	1.23 ± 1.18	1.37 ± 1.25	0.423
Right middle	0.83 ± 0.83	1.07 ± 0.86	0.058
Right lower	2.44 ± 1.89	2.98 ± 2.04	0.062
Left upper	1.53 ± 1.70	2.11 ± 1.94	0.028
Left lower	2.43 ± 1.84	2.80 ± 2.06	0.190
mGGO-C	84 (82.4%)	76 (87.4%)	0.454
Round shape	69 (67.6%)	58 (66.7%)	1.000
Other shape	84 (82.4%)	68 (78.2%)	0.589
Paving stone	30 (29.4%)	22 (25.3%)	0.639
Grid-like shadow	56 (54.9%)	57 (65.5%)	0.182
Subpleural distribution	93 (91.2%)	79 (90.8%)	1.000
Diffuse distribution	14 (13.7%)	19 (21.8%)	0.203
Pleural effusion	0	1 (1.1%)	0.936

Abbreviations: bpm = beats per minute; COPD = chronic obstructive pulmonary disease; COVID-19 = coronavirus disease 2019; mGGO-C = mixed ground-glass opacity with consolidation; rpm = breaths per minute; SaO₂ = oxygen saturation

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APPENDIX 6. Comparison among SARS, MERS, and COVID-19

	SARS¹⁻⁴	MERS^{5,6}	COVID-19
Year of first identification	2003	2012	2019
Geographical origin	South China, with imported cases causing large outbreaks in Canada and Asia	Middle East, with imported cases in Europe, Africa, Asia, and North America	China, with imported cases causing large outbreaks in South Korea, Italy, and Iran
Main types of transmission	Person to person, animal to human	Animal to human, person to person	Person to person, animal to human
Modes of transmission	Droplet, contact, airborne	Droplet, contact, airborne	Droplet, contact, aerosol
Incubation period	2-14 days, occasionally up to 21 days	2-15 days	2-14 days, occasionally up to 24 days
Basic reproduction number (R_0)	0.3-4.1 ⁷	0.3-1.3	2.06-2.52 ⁸
Respiratory symptoms	Cough, dyspnoea	Dry cough, sore throat, dyspnoea	Dry cough, dyspnoea
Constitutional symptoms	Fever, chill, malaise, headache, diarrhoea	Fever, chill, acute renal impairment, diarrhoea	Fever, myalgia, fatigue, diarrhoea
Common extrapulmonary manifestations	Diarrhoea	Acute renal failure, diarrhoea	Diarrhoea
Common changes in blood test	Leukopenia, lymphopenia, thrombocytopenia, increased alanine and aspartate aminotransferase levels	Leukopenia, lymphopenia, thrombocytopenia, impaired liver function at presentation; renal function impairment, leukocytosis, and neutrophilia with progressive illness	Leukopenia, lymphopenia, elevated levels of serum transaminases, lactate dehydrogenase, creatine kinase, troponin and C-reactive protein are seen occasionally
Chest CT features ^{9,10}	Subpleural GGO and consolidation prominent lower lobe involved, interlobular septal and intralobular septal thickening	Bilateral, predominantly basilar, and subpleural airspace involvement, with extensive GGOs and occasional septal thickening and pleural effusions ¹¹	Multifocal patchy GGOs with subpleural distribution (mild) Diffuse heterogeneous consolidation with GGO (severe) ¹²

Abbreviations: COVID-19 = coronavirus disease 2019; CT = computed tomography; GGO = ground-glass opacity; MERS = Middle East respiratory syndrome; SARS = severe acute respiratory syndrome

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