

## Supplementary Material

### Health consequences of COVID-19 convalescents at 30 months after infection, a study from China

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**S1 Table. GGO scoring system.**

<b>Lungs</b>	<b>Sections</b>	<b>Scores (0-24)</b>
Left lung	upper (above the level of carina)	0, no involvement
		1, involvement <25%
		2, 25-50% involvement
		3, 50-75% involvement
	middle	4, involvement >75%
		0, no involvement
		1, involvement <25%
		2, 25-50% involvement
	lower (below the level of the right lower pulmonary vein)	3, 50-75% involvement
		4, involvement >75%
		0, no involvement
		1, involvement <25%
Right lung	upper (above the level of carina)	2, 25-50% involvement
		3, 50-75% involvement
		4, involvement >75%
		0, no involvement
	middle	1, involvement <25%
		2, 25-50% involvement
		3, 50-75% involvement
		4, involvement >75%
	lower (below the level of the right lower pulmonary vein)	0, no involvement
		1, involvement <25%
		2, 25-50% involvement
		3, 50-75% involvement
		4, involvement >75%

**S2 Table. RP scoring system.**

<b>Lungs</b>	<b>Lobes</b>	<b>Segments</b>	<b>Scores (0-26)</b>
Left lung	upper lobe	2 segments	0, no lines  1, 1-2 short line/grid shadows  2, multiple line/grid shadows  3, <1 lung segment's aggregated line/grid-like shadows in the subpleural area  4, 1-3 lung segments' large grid shadows  5, >3 lung segments' diffuse grid shadows and/or deformed lung structure
	lingual lobe	2 segments	0, no lines  1, 1-2 short line/grid shadows  2, multiple line/grid shadows  3, <1 lung segment's aggregated line/grid-like shadows in the subpleural area  4, 1-3 lung segments' large grid shadows  5, >3 lung segments' diffuse grid shadows and/or deformed lung structure
	lower lobe	≥2 segments	0, no lines  1, 1-2 short line/grid shadows  2, multiple line/grid shadows  3, <1 lung segment's aggregated line/grid-like shadows in the subpleural area  4, 1-3 lung segments' large grid shadows  5, >3 lung segments' diffuse grid shadows and/or deformed lung structure

Right lung	upper lobe	3 segments	0, no lines 1, 1-2 short line/grid shadows 2, multiple line/grid shadows 3, <1 lung segment's aggregated line/grid-like shadows in the subpleural area 4, 1-3 lung segments' large grid shadows 5, >3 lung segments' diffuse grid shadows and/or deformed lung structure
	lingual lobe	2 segments	0, no lines 1, 1-2 short line/grid shadows 2, multiple line/grid shadows 3, <1 lung segment's aggregated line/grid-like shadows in the subpleural area 4, 1-3 lung segments' large grid shadows 5, >3 lung segments' diffuse grid shadows and/or deformed lung structure
	lower lobe	$\geq 2$ segments	0, no lines 1, 1-2 short line/grid shadows 2, multiple line/grid shadows 3, <1 lung segment's aggregated line/grid-like shadows in the subpleural area 4, 1-3 lung segments' large grid shadows 5, >3 lung segments' diffuse grid shadows and/or deformed lung structure

**S3 Table. Basic characteristics of COVID-19 convalescents according to the dosage of vaccine at 30 months after infection.**

<b>Variables</b>	<b>Unvaccinated</b>	<b>Single dose</b>	<b>Two doses</b>	<b>Three doses</b>
Age, years	57.0 (48.8, 64.2)	54.5 (44.8, 63.8)	62.0 (49.0, 69.0)	59.0 (52.0, 66.0)
Female, n (%)	9 (32.1)	11 (45.8)	28 (49.1)	60 (55.6)
Comorbidities, n (%)				
Hypertension	10 (35.7)	11 (45.8)	25 (43.9)	41 (38.0)
Hyperlipidemia	11 (39.3)	13 (54.2)	19 (33.3)	36 (33.3)
Diabetes	4 (14.3)	3 (12.5)	10 (17.5)	13 (12.0)
Cardiovascular disease	6 (21.4)	4 (16.7)	7 (12.3)	12 (11.1)
COPD	0 (0.0)	0 (0.0)	3 (5.3)	4 (3.7)
Cancer	0 (0.0)	0 (0.0)	1 (1.8)	3 (2.8)
Medication administration history, n (%)				
Antihypertensive	8 (28.6)	10 (41.7)	21 (36.8)	38 (35.2)
Hypoglycemic drugs	3 (10.7)	2 (8.3)	9 (15.8)	11 (10.2)
Hypolipidemic drugs	5 (17.9)	8 (33.3)	8 (14.0)	23 (21.3)
Anticoagulants	3 (10.7)	4 (16.7)	3 (5.3)	16 (14.8)
Smoking, n (%)				
Never-smoker	22 (78.6)	21 (87.5)	51 (89.5)	92 (85.2)
Ever-smoker	6 (21.4)	3 (12.5)	6 (10.5)	16 (14.8)
Alcohol, n (%)				
Never-drinker	24 (85.7)	19 (79.2)	49 (86.0)	85 (78.7)
Ever-drinker	4 (14.3)	5 (20.8)	8 (14.0)	23 (21.3)
Exercise, n (%)	13 (46.4) §*	17 (70.8)	44 (77.2)	79 (73.1)
Overweight, n (%)	19 (67.9)	17 (70.8)	32 (56.1)	64 (59.3)

Data were expressed as median (IQR) or frequency (percentage) and compared with Kruskal-Wallis test. Categorical variables were expressed as frequency (percentage) and compared by  $\chi^2$  test or Fisher's Exact test. § Significant difference between the unvaccinated and two doses group ( $P <$

0.05). \* Significant difference between the unvaccinated and three doses group ( $P < 0.05$ ). There were 28, 24, 57, and 108 participants in the unvaccinated, single dose, two doses, and three doses groups respectively.

Abbreviations: COPD, chronic obstructive pulmonary disease.

**S4 Table. Biochemical indicators of COVID-19 convalescents according to the disease severity at 30 months after infection.**

<b>Variables</b>	<b>Total population</b>	<b>Mild cases</b>	<b>Severe cases</b>	<b>P value</b>
White blood cell count ( $\times 10^9/L$ )	5.3 (4.5, 6.2)	5.2 (4.3, 6.2)	5.3 (4.6, 6.3)	0.569
Lymphocyte count ( $\times 10^9/L$ )	1.6 (1.3, 1.9)	1.6 (1.3, 1.9)	1.6 (1.4, 1.9)	0.326
Lymphocyte%	31.6 (26.5, 36.9)	31.8 (26.4, 36.2)	30.6 (26.7, 37.7)	0.786
Neutrophil%	58.2 (52.3, 63.4)	58.5 (53.1, 63.9)	57.9 (51.7, 63.3)	0.589
Platelet count ( $\times 10^9/L$ )	222.0 (184.0, 259.0)	221.5 (184.0, 258.5)	223.0 (189.0, 259.0)	0.791
Red blood cell count ( $\times 10^{12}/L$ )	4.7 (4.3, 5.0)	4.6 (4.4, 5.0)	4.8 (4.3, 5.1)	0.311
Hemoglobin level (g/L)	142.0 (132.0, 152.0)	141.0 (132.8, 149.2)	143.0 (131.0, 153.0)	0.331
Alanine aminotransaminase Level (U/L)	19.0 (13.0, 28.0)	20.0 (13.0, 29.0)	18.0 (12.0, 27.0)	0.198
Aspartate transaminase level (U/L)	20.0 (18.0, 25.0)	20.0 (18.0, 25.0)	21.0 (17.0, 25.0)	0.721
Lactate dehydrogenase level (U/L)	186.0 (172.0, 205.0)	186.0 (173.8, 204.5)	186.0 (172.0, 205.0)	0.933
Homocysteine ( $\mu\text{mol}/L$ )	10.8 (8.9, 12.8)	10.9 (9.1, 13.8)	10.6 (8.6, 12.6)	0.318
Fasting blood glucose (mmol/L)	5.0 (4.8, 5.5)	5.0 (4.7, 5.4)	5.1 (4.8, 5.5)	0.676
Albumin level (g/L)	45.7 (44.4, 47.1)	45.7 (44.2, 47.1)	45.8 (44.5, 47.2)	0.400
Albumin and Globulin ratio	1.7 (1.6, 1.9)	1.7 (1.5, 1.9)	1.8 (1.6, 1.9)	<b>0.015</b>
Total bilirubin level ( $\mu\text{mol}/L$ )	12.9 (10.1, 16.3)	12.7 (10.0, 15.3)	13.1 (10.3, 16.6)	0.267
Total cholesterol (mmol/L)	4.6 (4.0, 5.1)	4.7 (4.0, 5.2)	4.6 (4.0, 5.0)	0.635
Total glycerid (mmol/L)	1.6 (1.1, 2.3)	1.6 (1.2, 2.3)	1.5 (1.1, 2.3)	0.315
Urea nitrogen level (mmol/L)	5.2 (4.3, 6.2)	5.0 (4.2, 6.1)	5.4 (4.5, 6.2)	0.230
Creatinine level ( $\mu\text{mol}/L$ )	66.0 (57.0, 80.0)	66.0 (56.0, 80.0)	66.0 (57.0, 80.0)	0.983
Uric acid ( $\mu\text{mol}/L$ )	345.0 (287.0, 405.0)	351.0 (292.8, 404.5)	339.0 (284.0, 405.0)	0.583
Estimated glomerular filtration rate (mL/min)	108.9 (91.6, 127.9)	108.0 (89.2, 126.9)	109.0 (92.5, 128.1)	0.440

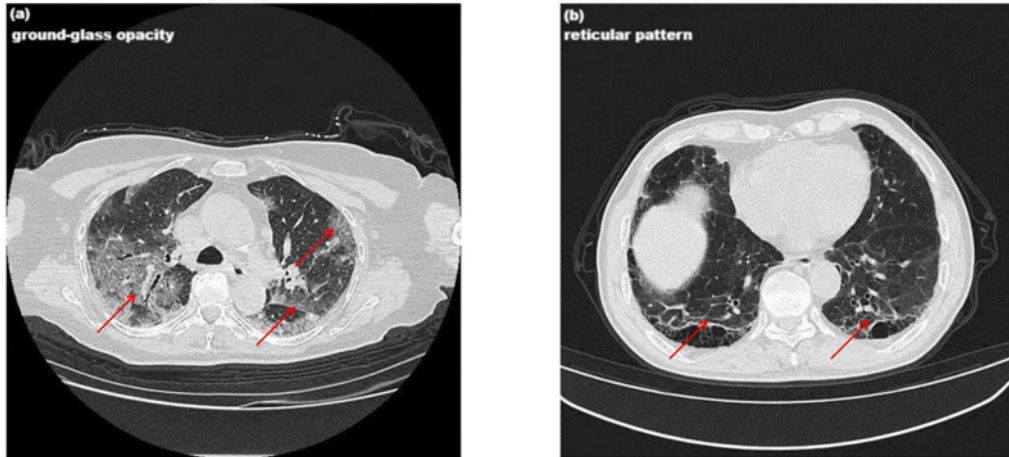
Data were expressed as median (IQR) and compared with the Mann-Whitney U test. There were 217, 116, and 101 participants in the total population, mild cases, and severe cases groups respectively. Bold *P* value represents a statistically significant result.

**S5 Table. Biochemical indicators of COVID-19 convalescents according to the dosage of vaccine at 30 months after infection.**

<b>Variables</b>	<b>Unvaccinated</b>	<b>Single dose</b>	<b>Two doses</b>	<b>Three doses</b>
White blood cell count ( $\times 10^9/L$ )	5.1 (4.6, 5.7)	5.7 (5.2, 6.5)	5.2 (4.2, 6.3)	5.2 (4.6, 6.3)
Lymphocyte count ( $\times 10^9/L$ )	1.6 (1.3, 1.7)	1.6 (1.4, 2.1)	1.6 (1.2, 1.9)	1.7 (1.3, 2.0)
Lymphocyte%	32.0 (26.8, 35.9)	31.6 (27.0, 36.0)	31.1 (26.7, 34.3)	32.5 (26.0, 38.5)
Neutrophil%	56.1 (53.2, 61.4)	59.2 (54.6, 61.6)	60.2 (53.4, 63.1)	57.6 (51.4, 63.9)
Platelet count ( $\times 10^9/L$ )	213.5 (174.8, 268.2)	229.0 (183.5, 253.8)	214.0 (178.0, 255.0)	225.5 (196.5, 267.5)
Red blood cell count ( $\times 10^{12}/L$ )	4.6 (4.3, 4.9)	4.7 (4.5, 5.1)	4.7 (4.4, 5.1)	4.6 (4.3, 5.0)
Hemoglobin level (g/L)	147.0 (131.2, 153.0)	143.5 (137.8, 159.0)	142.0 (130.0, 153.0)	140.5 (132.0, 150.0)
Alanine aminotransaminase Level (U/L)	16.0 (11.8, 20.5)	21.0 (16.0, 29.0)	17.0 (12.0, 29.0)	20.0 (13.0, 29.0)
Aspartate transaminase level (U/L)	19.5 (17.0, 22.5)	19.5 (17.0, 27.2)	21.0 (17.0, 26.0)	20.5 (18.0, 24.2)
Lactate dehydrogenase level (U/L)	180.5 (170.8, 201.0)	187.0 (170.5, 201.5)	190.0 (174.0, 208.0)	186.0 (172.0, 204.5)
Homocysteine ( $\mu\text{mol}/L$ )	12.0 (10.3, 13.6)	10.2 (8.6, 12.2)	10.6 (9.4, 13.9)	10.5 (8.4, 12.4)
Fasting blood glucose (mmol/L)	5.0 (4.8, 5.9)	5.1 (4.7, 5.3)	5.1 (4.8, 5.7)	5.0 (4.7, 5.4)
Albumin level (g/L)	44.7 (43.3, 46.8)	46.0 (44.4, 47.1)	45.6 (44.3, 47.6)	45.8 (44.4, 47.1)
Albumin and Globulin ratio	1.7 (1.6, 1.9)	1.7 (1.6, 1.9)	1.7 (1.5, 1.9)	1.7 (1.6, 1.9)
Total bilirubin level ( $\mu\text{mol}/L$ )	13.3 (10.9, 15.3)	11.9 (9.9, 15.8)	12.1 (10.0, 15.3)	13.1 (10.3, 16.6)
Total cholesterol (mmol/L)	4.2 (3.7, 4.7) *	4.7 (3.9, 4.9)	4.4 (3.9, 5.2)	4.7 (4.1, 5.3)
Total glycerid (mmol/L)	1.3 (1.1, 1.7)	1.8 (1.3, 2.6)	1.6 (1.2, 2.4)	1.5 (1.1, 2.3)
Urea nitrogen level (mmol/L)	5.6 (4.6, 6.4)	5.2 (4.6, 5.7)	5.0 (4.2, 6.1)	5.2 (4.3, 6.2)
Creatinine level ( $\mu\text{mol}/L$ )	71.0 (61.0, 84.5) *	66.5 (59.8, 79.5)	69.0 (57.0, 80.0)	61.5 (54.0, 78.2)
Uric acid ( $\mu\text{mol}/L$ )	353.5 (287.8, 388.0)	328.5 (283.8, 391.0)	337.0 (287.0, 398.0)	349.0 (291.5, 412.2)
Estimated glomerular filtration rate (mL/min)	103.9 (85.4, 118.4)	107.8 (91.2, 123.6)	106.6 (87.8, 121.0)	112.0 (92.4, 133.8)

Continuous variables were expressed as median (IQR) and compared with Kruskal-Wallis test. \* Significant difference between unvaccinated and three doses groups ( $P < 0.05$ ). There were 28, 24, 57, and 108 participants in the unvaccinated, single dose, two doses, and three doses groups respectively.





**S1 Figure. Abnormal chest computed tomography.**

(a) ground-glass opacity. (b) reticular pattern. The red arrows indicated abnormal ground-glass opacity and abnormal reticular pattern in efigure 1(a) and efigure 1(b), respectively.