

## Supplement

### **Pulmonary function and radiological features four months after COVID-19: first results from the national prospective observational Swiss COVID-19 lung study**

Guler SA<sup>1</sup>, Ebner L<sup>2</sup>, Beigelmann C<sup>3</sup>, Bridevaux PO<sup>4</sup>, Brutsche M<sup>5</sup>, Clarenbach C<sup>6</sup>, Soccac PM<sup>7</sup>, Garzoni C<sup>8,9</sup>, Geiser T<sup>1,10</sup>, Ott SR<sup>11</sup>, Lenoir A<sup>12</sup>, Mancinetti M<sup>13</sup>, Naccini B<sup>14</sup>, Piquilloud Imboden L<sup>15</sup>, Prella M<sup>12</sup>, Que YA<sup>16</sup>, von Garnier C<sup>12</sup>, Funke-Chambour M<sup>1,14</sup>

<sup>1</sup>Department of Pulmonary Medicine, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland

<sup>2</sup>Department of Diagnostic, Interventional and Pediatric Radiology, Inselspital, Bern University Hospital, University of Bern, Switzerland.

<sup>3</sup>Radiodiagnostic and Interventional Radiology, CHUV-University Hospital, Lausanne, Switzerland

<sup>4</sup>Service de Pneumologie, Hôpital du Valais, Sion, Switzerland

<sup>5</sup>Lung Center, Kantonsspital St. Gallen, St. Gallen, Switzerland

<sup>6</sup>Pneumology, University Children Hospital Zürich, Zürich, Switzerland.

<sup>7</sup>Faculty of Medicine, Geneva University, Geneva, Switzerland.

<sup>8</sup>Clinic of Internal Medicine and Infectious Diseases, Clinica Luganese Moncucco, Lugano, Switzerland;

<sup>9</sup>Department of Infectious Diseases, Bern University Hospital, University of Bern, Bern, Switzerland

<sup>10</sup>Department for BioMedical Research, University of Bern, Bern, Switzerland.

<sup>11</sup>Department of Pulmonary Medicine, St. Claraspital AG, Basel, Switzerland

<sup>12</sup>Department of Pulmonary Medicine, University Hospital Lausanne, Lausanne, Switzerland

<sup>13</sup>Department of Internal Medicine, University and Hospital of Fribourg, Switzerland

<sup>14</sup>Tessin Department of Pulmonary medicine, Clinica Luganese Moncucco, Lugano,  
Switzerland

<sup>15</sup>Adult Intensive care unit, University Hospital and University of Lausanne, Lausanne  
Switzerland

<sup>16</sup>Department of Intensive Care Medicine, Inselspital, Bern University Hospital, University of  
Bern, Bern, Switzerland

**Table S1.** Functional and radiological features at follow-up after severe/critical and mild/moderate COVID-19 after exclusion of patients with previously diagnosed chronic lung disease.

	<b>Severe/critical disease (n=60)</b>	<b>Mild/moderate disease (n=46)</b>	
	<i>Number (%), mean (SD)</i>		<i>p-value*</i>
<b>FUNCTIONAL PARAMETERS AT FOLLOW-UP</b>			
FEV/FVC, %	95.8 (11.8)	85.3 (12.5)	<0.001
TLC, % predicted	85.5 (19.1)	101.0 (18.6)	<0.001
FVC, % predicted	87.6 (20.1)	94.8 (17.3)	0.056
FEV1, % predicted	91.5 (19.6)	93.7 (15.7)	0.51
DLCO, % predicted	75.4 (17.3)	96.3 (19.6)	<0.001
p <sub>a</sub> O <sub>2</sub> , mmHg	80.8 (11.4)	88.2 (8.1)	<0.001
6-MWD, meters	464 (95)	576 (78)	<0.001
O <sub>2</sub> nadir on 6MWT	90 (3.9)	92 (3.1)	0.008
O <sub>2</sub> desaturation 6MWT	5.3 (3.5)	2.7 (3.1)	<0.001
<b>RADIOLOGICAL FEATURES AT FOLLOW-UP (n=48)</b>			
Hypoattenuation mosaic pattern	65%	13%	0.01
Reticulations	58%	13%	0.047

From the original cohort (n=113), 2 patients with ILD and 5 patients with COPD (2 of those with relevant emphysema) were excluded.

**Abbreviations:** COPD, chronic obstructive pulmonary disease; DLCO, diffusing capacity of the lung for carbon monoxide; FEV1, forced vital capacity in 1 minute; FVC, forced vital capacity; p<sub>a</sub>O<sub>2</sub>, arterial partial pressure of oxygen; TLC, total lung capacity; 6MWD, 6-minute walk distance; 6MWT, 6-minute walk test

**Table S2.** Correlation between duration of mechanical ventilation and functional parameters at follow-up.

<b>Duration of mechanical ventilation, days</b>	<b>Spearman's correlation, r</b>	<b>p-value</b>
TLC, % predicted	-0.43	0.008
FVC, % predicted	-0.28	0.09
FEV1, % predicted	-0.23	0.16
FEV1/FVC, %	-0.01	0.93
DLCO, % predicted	-0.42	0.01
p <sub>a</sub> O <sub>2</sub> , mmHg	-0.23	0.18
6-MWD, meters	-0.22	0.18
O <sub>2</sub> nadir on 6MWT	-0.07	0.68
Pl <sub>max</sub> , kPa	0.06	0.73
PE <sub>max</sub> , kPa	0.21	0.26

**Abbreviations:** DLCO, diffusing capacity of the lung for carbon monoxide; FEV1, forced vital capacity in 1 minute; FVC, forced vital capacity; p<sub>a</sub>O<sub>2</sub>, arterial partial pressure of oxygen; Pl<sub>max</sub>, maximal inspiratory pressure; PE<sub>max</sub>, maximal expiratory pressure; TLC, total lung capacity; 6MWD, 6-minute walk distance; 6MWT, 6-minute walk test

**Table S3.** Radiological features at follow-up after severe/critical and mild /moderate COVID-19.

	<b>Severe/critical disease (n=44)</b>	<b>Mild/moderate disease (n=8)</b>	
	<i>Number (%), mean (SD), median (IQR)</i>		<i>p-value</i>
Hypoattenuation mosaic pattern	66%	13%	<b>0.007</b>
Reticulations	59%	13%	1
Architectural distortion	52%	13%	0.055
Bronchiectasis	43%	13%	0.13
Curveylinear lines	39%	5%	0.69
Consolidation	30%	25%	1
Honeycombing	11%	0	1
Cysts	9%	0	1
Interlobular septal thickening	2%	0	1
Pleural thickening	2%	0	1
Tree in bud pattern	0	0	
Solid nodules	5%	0	1
Multifocal distribution	47%	13%	0.12
Focal distribution	22%	24%	0.64
Diffuse distribution	11%	0	1

**Abbreviations:** COVID-19, coronavirus disease 2019

**Figure S1.** Post COVID-19 pulmonary fibrosis 3 months after acute respiratory distress syndrome (ARDS).

Extensive architectural distortion, reticulations and honeycombing representing late effects of post-COVID-19 ARDS.

