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Pulmonary function and radiological features 4 months after COVID-19: first results from the national prospective observational Swiss COVID-19 lung study

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COVID-19 pulmonary sequelae are unknown. The Swiss COVID-19 lung study reports on initial follow-up findings. Severe or critical COVID-19 was associated with significant functional impairment and radiological abnormalities after 4 months. <https://bit.ly/34sNVvi>

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ABSTRACT

Background: The infectious coronavirus disease 2019 (COVID-19) pandemic is an ongoing global healthcare challenge. Up to one-third of hospitalised patients develop severe pulmonary complications and acute respiratory distress syndrome. Pulmonary outcomes following COVID-19 are unknown.

Methods: The Swiss COVID-19 lung study is a multicentre prospective cohort investigating pulmonary sequelae of COVID-19. We report on initial follow-up 4 months after mild/moderate or severe/critical COVID-19 according to the World Health Organization severity classification.

Results: 113 COVID-19 survivors were included (mild/moderate n=47, severe/critical n=66). We confirmed several comorbidities as risk factors for severe/critical disease. Severe/critical disease was

associated with impaired pulmonary function, *i.e.* diffusing capacity of the lung for carbon monoxide (D_{LCO}) % predicted, reduced 6-min walk distance (6MWD) and exercise-induced oxygen desaturation. After adjustment for potential confounding by age, sex and body mass index (BMI), patients after severe/critical COVID-19 had a D_{LCO} 20.9% pred (95% CI 12.4–29.4% pred, $p=0.01$) lower at follow-up. D_{LCO} % pred was the strongest independent factor associated with previous severe/critical disease when age, sex, BMI, 6MWD and minimal peripheral oxygen saturation at exercise were included in the multivariable model (adjusted odds ratio per 10% predicted 0.59, 95% CI 0.37–0.87; $p=0.01$). Mosaic hypoattenuation on chest computed tomography at follow-up was significantly associated with previous severe/critical COVID-19 including adjustment for age and sex (adjusted OR 11.7, 95% CI 1.7–239; $p=0.03$).

Conclusions: 4 months after severe acute respiratory syndrome coronavirus 2 infection, severe/critical COVID-19 was associated with significant functional and radiological abnormalities, potentially due to small-airway and lung parenchymal disease. A systematic follow-up for survivors needs to be evaluated to optimise care for patients recovering from COVID-19.