

Serology-positive but minimally symptomatic COVID-19 may still cause lung injury and lung function impairment

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Running Head: Mild COVID-19 causes lung function impairment

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Article submitted 30 March 2020. Final version accepted 3 April 2020.

Dear Editor,

Since December 2019, the novel coronavirus disease 2019 (COVID-19) has rapidly spread and is now classified as a pandemic with more than 800,000 cases reported in over 190 countries.¹ The disease is associated with a risk of respiratory failure and has a global mortality rate approaching 5%.¹ Infected individuals can be asymptomatic or have minimal symptoms, yet still being able to cause person-to-person transmission.² A study demonstrates that approximately two thirds of the incident SARS cases may have radiological changes consistent with pulmonary fibrosis approximately 5 weeks after being discharged from hospital.³ Whether there is any pulmonary sequelae in minimally symptomatic patients with COVID-19 remains unclear.

Through tracing and investigating all contacts of a COVID-19 patient (confirmed using RT-PCR), a 39-year-old never-smoker without underlying comorbidity was identified as the possible index case. He suffered from a mild cough with scanty sputum, but there was no fever, rhinorrhea or dyspnea. When admitted for quarantine on 19 February 2020 (5 weeks after symptom onset), his body temperature was 37.4°C, respiratory rate 20/min, and SaO₂ (arterial saturated oxygen) 98% under room air conditions. There were no respiratory or gastrointestinal symptoms. Chest radiography was normal. Laboratory studies revealed normal leukocyte (7,700/uL), lymphocyte (2,657/uL) and platelet counts (219,000/uL). Results of a rapid test for Influenza A and B were negative. Throat swabs and sputum samples collected on the first and second day of hospitalisation were test-negative for 2019-nCoV using RT-PCR. A blood sample obtained on 20 February was positive for antibody against viral nucleocapsid protein extracted from 2019-nCoV infected Vero-E6 cells, or cDNA-expressed protein, when tested using western blot at two blinded, independent laboratories.

Computed tomography of the patient's chest performed on 21 February showed a patch of consolidation with ground glass opacity over the right middle lobe (Figure). Results of lung function tests performed on the following day demonstrated normal forced expiratory volume in 1 sec (FEV₁ 81.10% of predicted) and forced vital capacity

(FVC 82.50% of predicted), with a mild impairment of corrected diffusing capacity for carbon monoxide (DLCOc 67.08% of predicted value), compatible with the process in lung recovery after SARS infection.⁴ Bronchoscopy revealed normal airway morphology with an increased proportion of lymphocytes (34%) and a very low CD4/CD8 ratio (0.25) in bronchoalveolar lavage.

This is the first report showing that a minimally symptomatic COVID-19 patient may still be contagious, and that the residual lung injury and lung function impairment can last for more than 1 month. Follow-up evaluation is necessary for COVID-19 patients regardless of the severity of symptoms.

Conflicts of interest: none declared.

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FIGURE LEGEND

Figure. Computed tomography of chest (left panel: horizontal view; right panel: sagittal view) performed 5 weeks after symptom onset showing a patch of consolidation with ground glass opacity over the right middle lobe.

