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Interstitial lung disease-related pneumomediastinum in COVID-19 patients

To the Editor:

We read with interest the work of Lemmers *et al.* [1] published recently in this journal. We also found that spontaneous pneumomediastinum is an uncommon presentation of severe coronavirus disease 2019 (COVID-19) patients. The mechanisms of pneumomediastinum remain unclear [2]. From March 2020 to November 2020 we identified eight patients with pneumomediastinum at intensive care unit admission among 401 COVID-19 patients in two Seine-Saint-Denis hospitals in the Paris (France) area. Neither risk factor nor underlying respiratory disease was identified in these patients. Spontaneous pneumomediastinum occurred without mechanical ventilation (neither noninvasive nor invasive) for four patients and on the day following tracheal intubation despite lung-protective invasive ventilation for the others. Tracheal and bronchial integrity was verified by direct bronchoscopic examination and high-resolution chest computed tomography. As reported by Lemmers *et al.* [1], plateau pressure was constantly <25 cmH_2O in the four patients under invasive mechanical ventilation, suggesting that pneumomediastinum were not related to barotrauma or traumatic tracheal intubation.

A similar observation was made in patients with severe acute respiratory syndrome in 2003 [3], but no physiopathological mechanism was identified. We here propose a hypothesis to explain pneumomediastinum in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Some patients with severe COVID-19 present extensive ground-glass opacities which contribute to hypoxaemia, but also reflect the intense inflammatory process occurring in the lung (figure 1). The inflammation can generate a retractive process illustrated by the bronchiectasis and the pneumomediastinum. Such a phenomenon is also seen in acute exacerbation of idiopathic pulmonary fibrosis [4], pleuroparenchymal fibroelastosis or melanoma-differentiation-associated protein 5 related interstitial lung diseases [5]. The high speed of inflammation installation and lung architectural change in these conditions could possibly explain the onset of pneumomediastinum.

In COVID-19 patients with pneumomediastinum, we believe that physicians should consider initiation of anti-inflammatory treatment to stop retractive processes and should not refrain from using steroids for SARS-CoV-2 pneumonia.

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Pneumomediastinum in severe #COVID19 presentations could be due to a lung parenchymal retractive process generated by intense inflammation as in acute exacerbation of idiopathic pulmonary fibrosis or MDA-5 acute interstitial lung disease https://bit.ly/3qzBYMW

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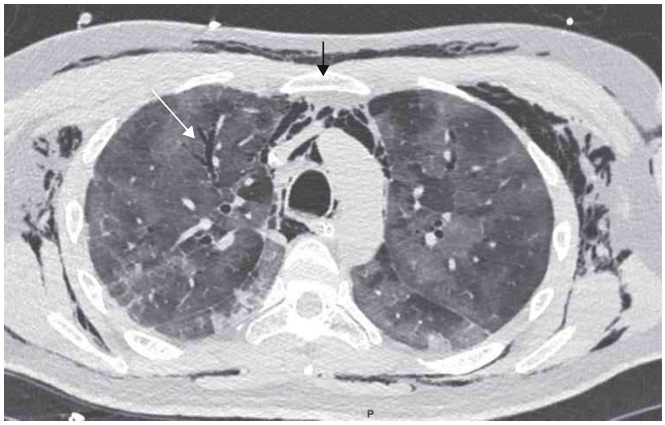

FIGURE 1 Ground-glass opacities in severe coronavirus disease 2019 reflect the intense inflammatory process occurring in the lung. The inflammation can generate a retractive process illustrated by the bronchiectasis (white arrow) and the pneumomediastinum (black arrow).

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