

## **Pulmonary embolism in returning traveler with COVID-19 pneumonia**

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**Running title:** Pulmonary embolism and COVID-19 pneumonia

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Reunion Island (845,000 inhabitants) is a French overseas department located in the Indian Ocean at a distance of 10,000 km from Paris. One hundred-thirty-five cases of coronavirus disease 2019 (COVID-19) were reported in Reunion Island as of 26 March 2020 (first case detected on 19 March 2020). More than 90% of these cases came from metropolitan France on long-haul flights. On 22 March 2020, a 50-year-old male patient with no medical history presented to the Reunion Island University Hospital with signs of upper respiratory infection accompanied by diarrhea, nausea, and fever. These signs appeared on 17 March 2020, 6 days after he returned to Reunion Island from metropolitan France, where there was an outbreak of COVID-19.<sup>1</sup> On clinical examination, the patient had a room saturation of 94%, a respiratory rate of 20/min, and a temperature of 38.4°C. Pulmonary auscultation revealed only a few crackles at the bases. The rest of the clinical examination was unremarkable. Biological tests showed a leucocyte count of 6.2 G/L (lymphocyte count of 0.71 G/L), C-reactive protein levels of 1.8 mg/L, brain natriuretic peptide levels < 10 ng/L, hs-troponin-T levels < 10 ng/L,

D-dimer levels of 3.02  $\mu\text{g/mL}$  and a  $\text{paO}_2$  of 83 mmHg. A chest X-ray showed no abnormality. In light of this presentation, a nasopharyngeal swab was collected on 23 March 2020 and tested positive for COVID-19. The patient's clinical condition deteriorated with a fever of  $38.4^\circ\text{C}$ , requiring the administration of oxygen at 3 L/min. Given the discrepancy between his hypoxemia and the chest X-ray, a chest CT scan with contrast injection was performed on 24 March 2020 (7 days after the onset of symptoms). The chest CT scan showed parenchymal damage indicative of COVID-19 pneumonia of moderate severity with lobar and segmental pulmonary embolism involving the middle lobe with a CO-RADS score of 5 (Figure 1-B and C). The patient was treated with effective anticoagulation (enoxaparin 8000 IU/12h). The global spread of the COVID-19 epidemic has been shown to occur through travel.<sup>2</sup> Long-haul flight travel is a known risk factor of pulmonary embolism.<sup>3</sup> Only one case of pulmonary embolism was reported during the MERS and SARS coronavirus epidemics.<sup>4</sup> A retrospective series suggests that patients with COVID-19 pneumonia may be at risk of developing pulmonary embolism.<sup>5</sup> The case described here reinforces this hypothesis. Moreover, patients with COVID-19 infections exhibit state of hyperinflammation and coagulopathy, frequently hypoxemia leading to inactivity and prolonged bed rest. Accordingly, clinicians should consider looking for this complication in patients with COVID-19 pneumonia who have travelled on long-haul flights.



**Figure 1** - Axial computed tomography pulmonary angiography performed on day 7 after onset of symptoms. (A): Thrombus (arrow) can be seen in the right middle lobe pulmonary artery. (B) Lung window shows moderate impairment.

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### **Informed consent**

Informed consent to publish was obtained from the patient.

### **Competing interest**

None declared.

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### **Authors Contributions**

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