

COVID-19 PNEUMONIA AND ACUTE PULMONARY EMBOLISM: A CASE REPORT

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ABSTRACT Since December 2019, a novel coronavirus (SARS-CoV2) disease emerged in China with the evidence of multiple cases of severe pneumonia. Since then, various clinical findings and complications related to that infection have been described. Recently, studies reported various cases of thrombotic events complicating SARS-CoV2 infections. Particularly, the incidence of pulmonary embolism appears to be higher in patients with the novel coronavirus disease. In the presence of clinical and/or biological evocative findings, pulmonary embolism has to be excluded. Recent arguments tend to prone thromboprophylaxis early in specific populations.

KEYWORDS Coronavirus, pulmonary embolism, dyspnea, thrombotic events

Introduction

Since December 2019, the novel coronavirus had spread worldwide from the Chinese city of Wuhan. At the end of March 2020, the novel coronavirus disease (Covid-19) had been declared as an international health emergency concern by the World Health Organization [1]. Covid-19 is a still incompletely understood condition in its different forms and complications. Many clinical findings have been reported from nasal congestion to dyspnea and respiratory distress [2]. The pathophysiology of SARS-CoV2 infection is not fully understood, but it seems that this particular condition is associated with different coagulation abnormalities, notably a pro-thrombotic state [3]. This article aims to describe the case of a patient who suffered from COVID-19 pneumonia complicated by acute pulmonary embolism and discuss its particular findings and implications.

Case report

We report the case of a 68-year-old female admitted to the Emergency Department for persistent dyspnea for a couple of days. She also described fever and cough with haemoptoic sputum.

She suffered from severe asthenia and loss of appetite. Her medical history was characterized by hypothyroidism treated with L-thyroxine and propranolol. On presentation, physical examination was unremarkable. Her blood pressure was 132/67mmHg, heart rate 74 bpm, respiratory rate 17 pm and oxygen saturation was 90%. She was afebrile. The electrocardiogram demonstrated a regular sinus rhythm without repolarization abnormality. Laboratory analysis revealed no anemia, no thrombopenia but elevated D-dimers level and a consequent inflammatory syndrome. Arterial gas demonstrated hypoxemia and respiratory alkalosis. A Chest Computed Tomography (CT) was performed and showed multiple pulmonary embolisms with bilateral ground-glass opacities evocative of SARS-CoV2 infection. The screening test using real-time polymerase chain reaction (RT-PCR) confirmed the infection by the SARS-CoV2. The patient was treated by subcutaneous low molecular weight heparin and admitted to the Intensive Care Unit to monitor for potential hemodynamic instability and manage the hypoxemia appropriately with high flow oxygen therapy. After four days, the patient was transferred to the Pulmonary Medicine Unit for a work-up. No predisposing factor for pulmonary embolism was found. Anticoagulation was pursued with Rivaroxaban 20mg once a day. The patient was then discharged home and her follow-up was unspecific.

Discussion

Covid-19 had been associated with multiple clinical findings. The main reported symptoms are cough and fatigue, along with the presence of fever [2]. However, atypical presentations and particular complications have been described while a certain

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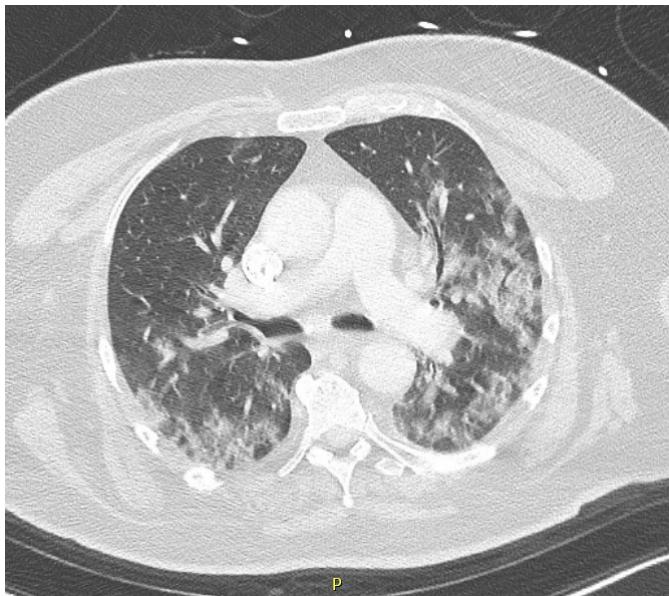


Figure 1. Contrast Chest CT showed bilateral ground glass opacities evocative of SARS-CoV2 infection.

percentage of the population does not develop any respiratory symptom, which represents a challenge for practitioners [2,3]. Recent reports focus on the different complications associated with Covid-19, such as myocarditis, nephritis and others [4,5]. Notably, Covid-19 seems to lead to different coagulation abnormalities and thrombotic events, such as deep venous thrombosis and pulmonary embolism [6,7]. Indeed, it has been suggested that 35% to 45% of patients with Covid-19 might develop thromboembolic complications [8]. Moreover, recent reports revealed that the prevalence of acute pulmonary embolism in Covid-19 patients seems to be higher compared to the reference population. The relation between inflammation and thrombosis is known for years and many severe infections can lead to pulmonary embolism such as seasonal Influenza but Covid-19 seems to be associated with a higher rate of pulmonary embolism than other acute and severe infections[9].

While non-contrast chest CT is currently recommended as the gold standard to diagnose and monitor COVID-19 patients, clinicians should not hesitate to perform CT pulmonary angiography to rule out pulmonary embolism in Covid-19 patients with persistent hypoxemia or unexplained secondary respiratory deterioration [7,10]. If clinical findings can be helpful, some laboratory findings should be kept in mind and alert physicians on the actual risk of coagulopathy. In particular, abnormalities on the d-dimers level, prothrombin time and platelet count are some early clues for the diagnosis of coagulation complications and adverse outcomes [11].

Covid-19 pathophysiological mechanisms leading to a higher rate of thrombotic events remain unclear even if the association between inflammation and thrombosis is probably involved. The hypercoagulable state and the major release of pro-inflammatory cytokines could possibly play a role in those adverse events [6]. Recently, new data were reported based on autopsies of patients who died from Covid-19. Histological findings revealed significant vascular thrombosis, microangiopathy and alveolar capillaries occlusion [12].

Guidelines for the treatment of pulmonary embolism remain the same. However, many questions emerged on the interest of

thromboprophylaxis in Covid-19 patients, mainly hospitalized patients and/or patients with elevated d-dimers [13]. Indeed, thromboprophylaxis seems to be associated with decreased mortality in severe Covid-19 patients [14].

Conclusion

Recent reports revealed that pulmonary embolism seems to be more frequent in patients suffering from Covid-19. The persistence of dyspnea and hypoxemia in patients with Covid-19 without other evident causes must remind healthcare practitioners to perform chest CT angiography to exclude pulmonary embolism. Moreover, thromboprophylaxis is suggested in hospitalized patients and seems to be associated with a decreased mortality in severe COVID-19 patients.

Conflict of interest

There are no conflicts of interest to declare by any of the authors of this study.

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