

# Hemoptysis in COVID-19 Patients: Fire under the Ashes?

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**Abstract:- Hemoptysis is a terrifying symptom for patients complicated with all types of pneumonia, regardless of etiology. A minor proportion of COVID-19 patients have suffered from hemoptysis. Among COVID-19 patients, this symptom might be detected during admission in severe cases or even as a presenting sign to the emergency. In any scenario, clinicians should think to causes of hemoptysis in these patients, whilst pulmonary emboli definitely on top.**

**Keywords:** COVID-19, Hemoptysis, Pulmonary Emboli.

Physicians treat COVID-19 patients sometimes are facing non- classic clinical picture of Cough, fever and shortness of breath. Recently became evident that COVID-19 is an inflammatory, thrombogenic disease and especially severe patients often have high d-dimers, fibrinogen and fibrin degradation products (FDP). (1)

Hemoptysis could be seen in various diseases such as tuberculosis, malignancy, bronchiectasis, pulmonary hemorrhage, pulmonary embolism, vasculitis, coagulation disorders and severe pneumonia. (2). However, Hemoptysis is a rare symptom of COVID-19. (3-6). Hemoptysis - sometimes massive – could be the first presentation of SARS-CoV-2 infection. (7,8)

There are increasing evidences about thromboembolic complications of COVID-19 (9,10) Hemoptysis in COVID-19 patients might be due to pulmonary emboli (PE) or not; however, the former is more common. COVID-19 patients with pulmonary embolism reportedly present with hypoxemia, chest pain, dyspnea, hemoptysis, and elevated D-dimer. (11) Generally, hemoptysis is a rare presentation of COVID-19, however, it is more common in patients complicated with PE (reaching up to 13%). (12,13) patients in the Prospective Investigation of Pulmonary Embolism (PIOPED) group were noted to have hemoptysis in 13% of PE cases. (14) Hemoptysis was also one of the clinical features with the highest association with PE in the final logistic regression model of the Pulmonary Embolism Rule Out Criteria (PERC). (15)

The correlation between COVID-19 and PE makes a diagnostic dilemma for clinicians. High D-Dimer levels (>1.0 mg/dl), although has been suggested as a marker of increased COVID-19 severity, but is not specific to PE

diagnosis. (16,17) Therefore, reliance on D-dimer as PE diagnosis marker should be interpreted cautiously in COVID-19. The suspected cases, should undergo Computed Tomography Angiography (CTA) to establish PE diagnosis whilst the risk of acute kidney injury due to intravenous contrast media should be considered. In addition to CTA, bedside tests such as ECG or echocardiography might be helpful to recognize COVID-19 patients complicated with PE.

Apart from PE, other causes of hemoptysis should be rigorously investigated, including Heparin overdose or warfarin toxicity (used for treatment of PE), Superimposed aspergillosis (18) and pulmonary hemorrhage (19)

In conclusion, COVID-19 patients occasionally come with atypical presentations or usual symptoms with different underlying pathologies warrant different diagnostic and therapeutic approach. During COVID-19 crisis, in any given patient presented with hemoptysis, clinician should think about COVID-19 and after confirmation, then pulmonary emboli should be rigorously ruled out.

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