

Cardiopulmonary Sequelae Following Pulmonary Embolism in COVID-19

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Introduction

The COVID-19 pandemic has significantly impacted global health, with a range of cardiovascular and pulmonary complications observed in patients both during and after infection. Among these, pulmonary embolism has emerged as a critical issue, exacerbating the disease's severity and complicating recovery. This opinion article explores the cardiopulmonary sequelae of pulmonary embolism in COVID-19 patients, emphasizing the need for increased awareness, tailored management strategies, and ongoing research to address this pressing issue effectively. COVID-19, caused by the SARS-CoV-2 virus, has presented unprecedented challenges to healthcare systems worldwide. While the respiratory manifestations of the disease, such as acute respiratory distress syndrome, have been well-documented, the cardiovascular and pulmonary complications of COVID-19 have garnered increasing attention. Pulmonary embolism has emerged as a significant complication, particularly in severe COVID-19 cases, impacting both acute management and long-term outcomes.

Description

COVID-19 is associated with a hypercoagulable state due to inflammatory responses, endothelial injury, and increased clotting factors. This hypercoagulability increases the risk of thromboembolic events, including pulmonary embolism. SARS-CoV-2 infection can cause systemic inflammation, endothelial dysfunction, and increased blood coagulability, contributing to a higher risk of PE. The virus may induce a pro-inflammatory state and activation of the coagulation cascade, leading to thrombus formation. Studies have shown that patients with severe COVID-19 are at an increased risk for PE, with varying reported incidences. Data suggest that PE is a common complication among hospitalized COVID-19 patients, particularly those with critical illness. PE in COVID-19 patients may present with symptoms similar to those of COVID-19 itself, such as shortness of breath, chest pain, and hypoxemia. Identifying PE in COVID-19 patients requires a high index of suspicion, given the similarity of symptoms to other COVID-19-related complications. Imaging studies, including CT pulmonary angiography, are essential for diagnosis, but the presence of ground-glass opacities and other COVID-19-related changes on imaging can sometimes obscure the diagnosis.

PE can cause acute right heart strain or right heart failure due to increased pulmonary artery pressure. This complication can worsen respiratory distress and impact overall cardiovascular stability. The obstruction of pulmonary

blood flow can exacerbate hypoxemia, complicating the management of patients with already compromised lung function due to COVID-19. Some patients may develop CTEPH, a condition characterized by persistent pulmonary artery hypertension due to unresolved or recurring thromboembolic events. This condition can lead to long-term morbidity and reduced quality of life. Persistent Pulmonary Dysfunction: Even after initial recovery from PE and COVID-19, patients may experience lingering pulmonary dysfunction, including decreased exercise capacity, persistent dyspnea, and impaired quality of life.

The use of anticoagulants is crucial in managing PE. However, the choice of anticoagulant and duration of therapy must be balanced with the risk of bleeding, particularly in patients with severe COVID-19 who may have additional bleeding risks. Patients with acute PE may require advanced supportive measures, including supplemental oxygen, mechanical ventilation, and in severe cases, extracorporeal membrane oxygenation (ECMO). Regular follow-up and pulmonary rehabilitation can help manage long-term pulmonary and cardiovascular complications. Patients should be monitored for signs of CTEPH and other chronic sequelae. Addressing cardiovascular risk factors, including hypertension, hyperlipidemia, and diabetes, is important for reducing the risk of future cardiovascular events. Research is needed to better understand the mechanisms linking COVID-19 with PE and to identify specific risk factors for PE in COVID-19 patients. Longitudinal studies are essential to evaluate the long-term cardiovascular and pulmonary outcomes of COVID-19 patients with PE. Clinical guidelines should address the management of PE in COVID-19 patients, including diagnostic criteria, treatment protocols, and follow-up care. Standardizing care protocols can help ensure consistent and effective management of PE in the context of COVID-19 [1-5].

Conclusion

Pulmonary embolism is a significant complication in COVID-19 patients, with both acute and long-term cardiopulmonary sequelae. The interplay between COVID-19 and PE underscores the need for heightened awareness, tailored management strategies, and ongoing research to address the complexities of this condition. As we continue to navigate the challenges posed by COVID-19, understanding and managing the cardiopulmonary complications of PE will be crucial for improving patient outcomes and advancing care.

References

1. Fabbri, Laura, Samuel Moss, Fasihul A. Khan and Wenjie Chi, et al. "Parenchymal lung abnormalities following hospitalisation for COVID-19 and viral pneumonitis: A systematic review and meta-analysis." *Thorax* 78 (2023): 191-201.
2. Prestes, Gabriele da Silveira, Carla Sasso Simon, Roger Walz and Cristiane Ritter, et al. "Respiratory outcomes after 6 months of hospital discharge in patients affected by COVID-19: A prospective cohort." *Front Med* 9 (2022): 795074.
3. Karampitsakos, Theodoros, Vasilina Sotiropoulou, Matthaïos Katsaras and Panagiota Tsiri, et al. "Post-COVID-19 interstitial lung disease: Insights from a machine learning radiographic model." *Front Med* 9 (2023): 1083264.
4. Tarraso, Julia, Belen Safont, Juan A. Carbonell-Asins and Estrella Fernandez-Fabrellas, et al. "Lung function and radiological findings 1 year after COVID-19: A prospective follow-up." *Respir Res* 23 (2022): 242.

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5. Bernardinello, Nicol, Elisabetta Cocconcelli, Chiara Giraud and Matteo Daverio, et al. "Predictors of pulmonary sequelae after COVID-19 pneumonia: A 12-month follow-up study." *Front Med* 10 (2023): 1084002.

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