CARDIOVASCULAR FLASHLIGHT

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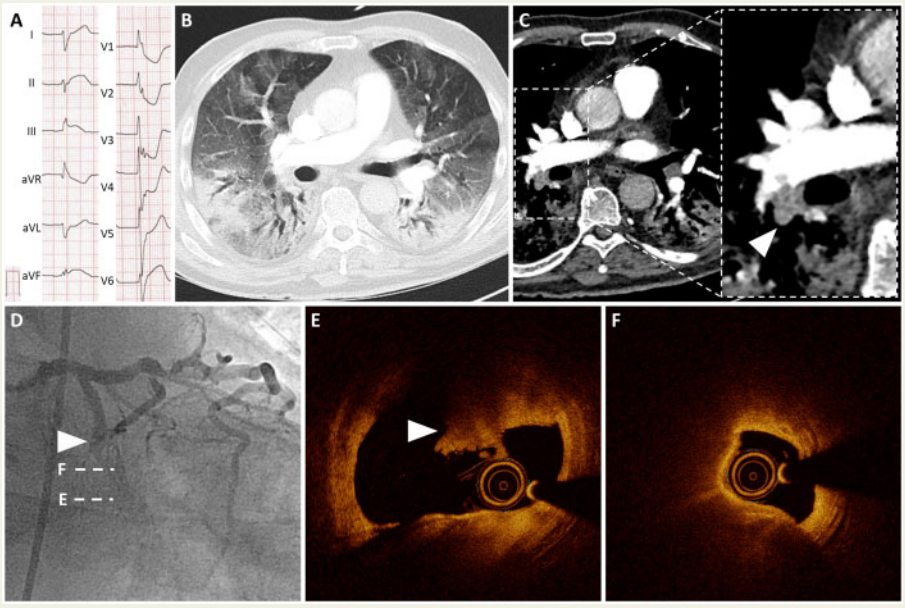
ST-elevation myocardial infarction and pulmonary embolism in a patient with COVID-19 acute respiratory distress syndrome

Yasushi Ueki , Tatsuhiko Otsuka , Stephan Windecker , and Lorenz Räber*

Department of Cardiology, Bern University Hospital, Bern, Switzerland

* Corresponding author. Department of Cardiology, Bern University Hospital, Inselspital, University of Bern, 3010 Bern, Switzerland. Tel: +41 31 632 09 29, Fax: +41 31 632 11 31, Email: lorenz.raeber@insel.ch



The clinical course of an 82-year-old patient with acute respiratory distress syndrome due to SARS-CoV-2 infection was complicated by concomitant ST-elevation myocardial infarction and pulmonary embolism.

An 82-year-old man was diagnosed with COVID-19 following a positive test for SARS-CoV-2 in the presence of symptoms of fever and mild dyspnoea. Following self-isolation at home for 1 week, the patient was hospitalized due to severe respiratory distress. Physical examination revealed a body temperature of 39.0°C, blood pressure of 152/113 mmHg, heart rate of 160 b.p.m., and an oxygen saturation of 78% on 10 L of oxygen. Laboratory investigations were remarkable for C-reactive protein (CRP) of 206 mg/L, procalcitonin of 0.57 μg/L, and D-dimer >10 000 μg/L. Although chest pain was not the prevailing symptom, an electrocardiogram showed evidence of an acute infero-posterior ST-segment elevation myocardial infarction (STEMI) (*Panel A*). Computed tomography demonstrated ground-glass opacities and consolidation (*Panel B*) and evidence of acute pulmonary embolism in the right pulmonary artery (*Panel C*, arrowhead). Transthoracic echocardiography showed no evidence of pulmonary arterial hypertension. After oro-tracheal intubation, emergent coronary angiography, which was performed in a dedicated COVID-19 catheterization laboratory, showed thrombotic occlusion of the proximal left circumflex artery (*Panel D*, arrowhead). Following gentle predilatation, optical coherence tomography (OCT) delineated evidence for a superimposed thrombus on a lipid-rich plaque without overt evidence of plaque rupture (*Panel E*, arrowhead) and high-grade stenosis proximal to the thrombus (*Panel F*). Reperfusion by means of primary percutaneous coronary intervention and implantation of a drug-eluting stent was performed with final TIMI III flow. Subsequently, the patient was referred to the intensive care unit for further care.

SARS-CoV-2 infection and COVID-19 disease have been associated with cardiovascular adverse events including acute myocardial infarction, myocarditis, heart failure, arrhythmia, and venous thrombo-embolic disease. Vascular and systemic inflammation caused by the SARS-CoV-2-mediated cytokine storm may lead to a prothrombotic and hypercoagulable status, and endothelial dysfunction. Whether these effects are more pronounced with SARS-CoV-2-associated pneumonia as compared with other respiratory viruses or bacteria remains unclear.

Treatment of COVID-19 requires multidisciplinary expertise to address the multifaceted clinical manifestations of this viral disease. Moreover, careful attention to interactions between antiviral and other medications including oral and intravenous anticoagulants should be considered in COVID-19 patients with need for anticoagulation to minimize the risk of bleeding and thrombo-embolic complications.