

Multivessel coronary thrombosis in a patient with COVID-19 pneumonia

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A 64-year-old male, with no known cardiovascular risk factors, was brought to the Emergency Room with an acute ST-elevation myocardial infarction (STEMI). One week before, he was admitted to the hospital because of a COVID-19 bilateral pneumonia treated with lopinavir–ritonavir and hydroxychloroquine, without any antithrombotic prophylaxis, and was discharged after 7 days without specific treatment, because he had made good clinical progress, just hours before he returned to the hospital.

Coronary angiography showed a critical thrombotic stenosis of the proximal right coronary artery (RCA; *Panel A*) as well as a non-occlusive filling defect compatible with thrombus at the middle segment of the left anterior descending (LAD) coronary artery (*Panels B and C*). Thrombus aspiration to the RCA was performed, achieving thrombotic material, but significant underlying stenosis persisted so a drug-eluting stent was successfully implanted. Optical coherence tomography (OCT) was performed to the LAD (*Panel D*; the numbers of each frame show the level of the frame at the LAD as they are shown in *Panel C*) and confirmed the presence of a non-occlusive thrombus without underlying atherosclerotic plaque. Post-stenting OCT was performed to the RCA without the presence of atheroma. The decision was to manage LAD thrombus medically with low-molecular weight heparin for 7 days in addition to the double antiplatelet therapy. The reverse transcription–PCR for SARS-CoV-2 was still positive.

C-reactive protein was initially raised after the diagnosis of COVID-19 pneumonia and subsequently decreased until the day of STEMI. In contrast, D-dimer and platelets were still increasing on the morning he was discharged, probably indicating abnormal clotting activation which led to the multivessel coronary obstructions. This phenomenon suggests *in situ* thrombosis as the mechanism, as no significant atheroma was found and the possibility of coronary emboli does not match with the fact that the LAD thrombus was not occlusive (60% stenosis) and it was just attached to the wall. This complication of the SARS-CoV-2 infection has not been reported previously, but it is in consonance with previous reports of increasing thrombotic risk in other vascular territories such as the pulmonary or cerebral circulation.

[Supplementary material](#) is available at *European Heart Journal* online.

