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Intracoronary and left ventricular thrombi in a 29-year-old COVID-19 convalescent with ST-segment elevation myocardial infarction

Short title: Intracoronary and left ventricle thrombi young COVID-19 convalescent

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A 29-year-old overweight male with no previous medical history and without family history of premature myocardial infarction, who recently recovered from a mild COVID-19 treated at home, was admitted due to anterior and lateral ST-segment elevation myocardial infarction (STEMI).

Transthoracic echocardiography (Video A1) revealed left ventricular ejection fraction (LVEF) of 55% with apex akinesis and left ventricular (LV) thrombus in the apical region. Coronary angiography showed large thrombus in the proximal left anterior descending artery (LAD) with TIMI 2 flow (**Figure 1A**, Supplementary material, *Video SA2*). Successful aspiration thrombectomy was performed and TIMI 3 flow was restored (**Figure 1B**, Supplementary material, *Video SB1*). Aspirated thrombus was analyzed using spectroscopy presented in H&E staining and color map distribution of organic matter indicating lipid rich areas, hem and lipid class and fibrin class (**Figure 1C**). Intravascular ultrasound imaging demonstrated the eccentric

plaque in ostial and proximal LAD covered by residual thrombus (Figure 1D, Supplementary material, *Video SDI*), which led to the administration of epifibatide and stenting deferral. The patient received enoxaparin along with aspirin and ticagrelor. Cardiac magnetic resonance confirmed thrombus in the LV apex (Supplementary material, *Figure SAI*). Control coronary angiography performed 8 days after the index procedure showed no significant stenosis (Figure 1E). Optical coherence tomography demonstrated almost complete thrombus resolution in the proximal part of the LAD without any signs of plaque rupture (Figure 1F, Supplementary material, *Video SFI*). Since there was no significant lesion in the LAD, we decided not to perform stenting and patient was discharged on warfarin (target INR 2–2.5) and clopidogrel. Patient was assessed for hypercoagulability state in out-patient department, however no abnormalities were found. Echocardiography performed 6 months after hospital discharged showed LVEF of 60% with hypokinesis of apex. Further, patient did not develop any new symptoms or needed another hospitalization.

SARS-COV-2 infection increases thromboembolic risk including higher risk of STEMI [1]. Intracoronary thrombus formation in young patients free of significant stenosis is infrequent during severe infection, including COVID-19. For how long patients in the convalescent phase of COVID-19 may have increased risk of cardiovascular events is yet to be determined.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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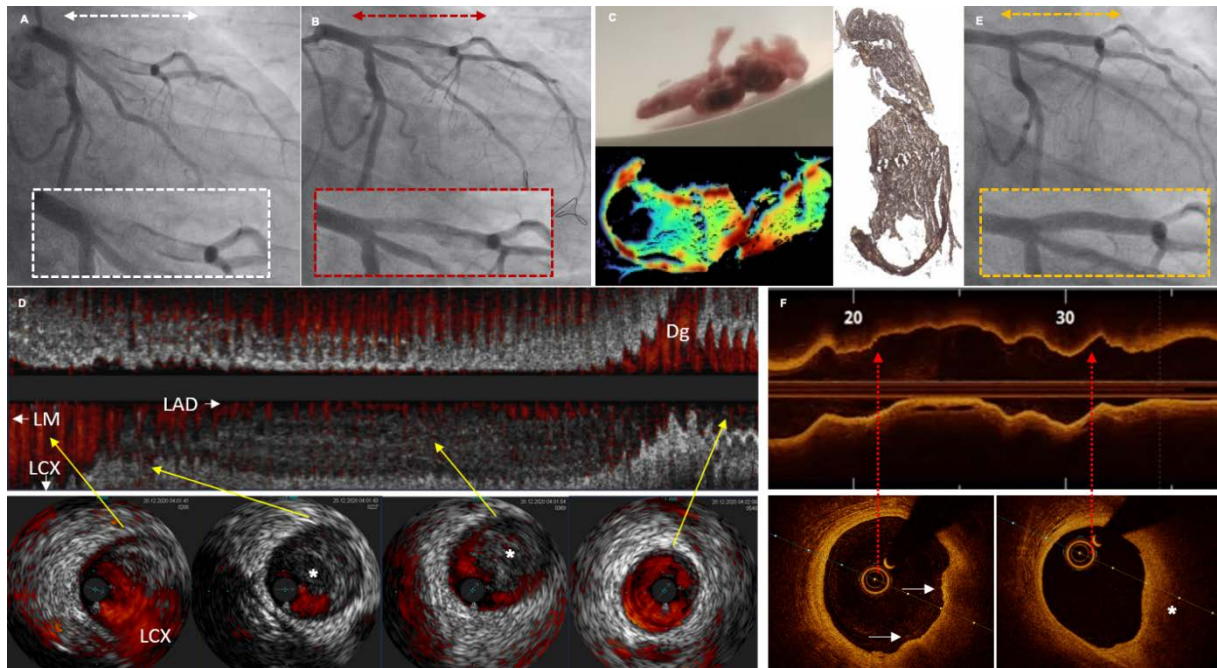


Figure 1. Multimodality assessment of patient with ST-segment myocardial infarction successfully treated with non-stenting strategy. Baseline coronary angiography with haziness in proximal left anterior descending artery (A) and angiography after thrombectomy (B). C. Aspirated thrombus with results of Fourier and Raman Spectroscopy. D. Intravascular ultrasound imaging with plaque in proximal part of LAD covered by thrombus protruding to medial LAD (asterisk). E. Control angiography and optical coherence tomography (F) with thrombus (the arrow) and lipid plaque (asterisks)

Abbreviations: LAD, left anterior descending artery