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The role of coronary computed tomography angiography in pre-procedural planning of percutaneous coronary intervention in a patient with non-ST-segment elevation myocardial infarction at General Hospital Dubrovnik: a case report

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Introduction: Coronary computed tomography angiography (CCTA) is one of the first-line diagnostic tests in patients with chronic coronary syndromes and also it is recommended in the evaluation of acute chest pain.[1,2] Due to its possibility of three-dimensional assessment and analyses of plaques structure, CCTA can serve as a guidance tool to planning percutaneous coronary interventions (PCI).[3,4] CCTA accurately shows coronary artery bypass grafts (CABG) and its patency.[5] The aim of this case report is to present appropriate utilization of CCTA in pre-procedural PCI planning in a patient with acute coronary syndrome and a history of CABG but unknown bypass graft anatomy.

Case report: 66-year-old British male, who had undergone CABG in 2016, but without operative records was admitted due to left arm numbness and exertional dyspnea without chest pain. Initial ECG showed ST-segment depression in precordial and inferior leads, which subsequently resolved. Troponin I (hs-TnI) increased from 2990.8 ng/L to 5520.7 ng/L. Echocardiography showed preserved left ventricular ejection fraction and mild inferoposterior hypokinesia. CCTA revealed a patent left internal mammary artery (LIMA) which ended as two "Y" branches. However, the „first branch" was native LIMA anastomosed to diagonal branch (Dg1) with "jumping" to LAD and it was patent. Second branch of LIMA was actually free arterial graft probable taken from RIMA which was absent with origin clips. This graft was anastomosed to first obtuse marginal branch (OM1), with good distal filling. This anatomy would be difficult to recognize on invasive angiography only. Proximal and middle LAD segments had diffuse calcified subocclusive plaques. Right coronary artery (RCA) had proximal diffuse mixed plaques with mild stenosis and significant mid-segment stenosis caused by a soft plaque. We concluded that left coronary artery had good revascularization and middle RCA was assessed as culprit lesion. Invasive procedure focused only on RCA and confirmed significant mid-RCA stenosis and moderate proximal stenosis. PCI was successfully performed with predilatation using a SC balloon followed by 2 stents implantation and postdilatation with a NC balloon. Dual antiplatelet therapy and intensified antihypertensive and statin therapy were initiated. The patient was discharged with recommendations for cardiology follow-up in the home country.

Conclusion: CCTA, as a noninvasive imaging tool, can serve as a gatekeeper for invasive coronary angiography in patients with acute chest pain. Moreover, it can also improve the planning of coronary interventions, as it provides a three-dimensional assessment of the entire coronary tree, which is especially important after CABG.

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