Prognostic value of intracoronary imaging-derived measures for non-infarct related vessel revascularization throughout 7 years among patients with ST-elevation myocardial infarction

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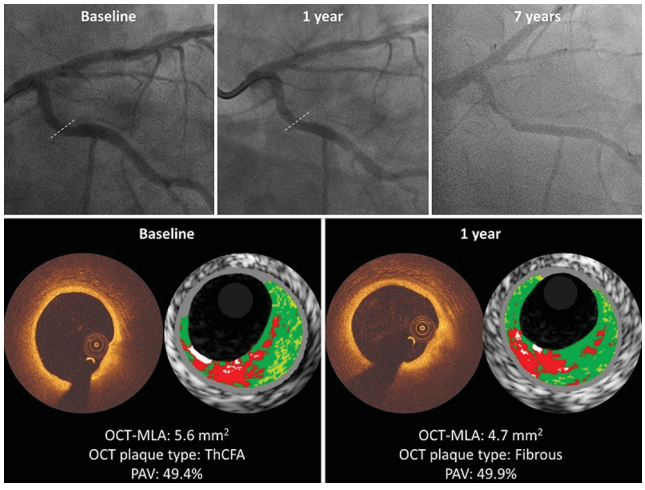
Background: Underlying plaque characteristics that lead to future revascularization during long-term follow-up remain poorly understood.
Purpose: We aimed to explore intracoronary imaging-derived measures as assessed by intravascular ultrasound (IVUS) and optical coherence tomography (OCT) associated with non-infarct related vessel revascularization (non-TVR) arising from imaged segments during long-term (up to 7 years) follow-up among patients with ST-elevated myocardial infarction (STEMI).
Methods: A total of 94 STEMI patients enrolled into the IBIS-4 (Integrated Biomarker Imaging Study-4) study undergoing serial (baseline and 13 months) IVUS and OCT in 2 non-infarct-related coronary arteries under high-intensity statin therapy were analyzed in the present study. Patients were divided into 2 groups according to the occurrence of non-TVR within previously imaged vessel segments (non-TVR: n=14, no non-TVR: n=80).
Results: Baseline characteristics including LDL level were comparable between groups. At baseline, lesions with future non-TVR were associated with greater percent atheroma volume by IVUS (55.6±5.4% vs. 49.6±6.1%, P<0.001), minimum lumen area by OCT (3.4±1.7 mm^2 vs. 6.0±3.3 mm^2, P=0.004), and a higher prevalence of fibroatheroma (60.0% vs. 20.1%, P=0.007) by OCT compared with those without. Among patients with serial imaging, lesions with non-TVR had a trend towards a less reduction of percent atheroma volume (–0.2±3.8% vs. –2.4±4.2%, P=0.083).
Conclusion: Greater plaque burden, smaller lumen area, and higher prevalence of OCT-detected fibroatheroma at baseline were associated with non-infarct related vessel revascularization. Lesions with non-TVR tend to have less-pronounced regression of coronary atheroma despite intensive statin therapy and achieved LDL levels.



Non-TVR 7 years after index PCI