

Coronary Plaque Modification Using a PCSK9 Inhibitor Assessed by Near-Infrared Spectroscopy Intravascular Ultrasound in Chronic Coronary Syndrome

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A 78-year-old man with hyperlipidemia and two-month history of exertional angina was referred to our department. Coronary computed tomography angiography revealed severe stenosis on the left circumflex artery (LCX) and left anterior descending artery (LAD). Coronary angiography demonstrated 99% stenosis in segment 13 of the LCX with flow limitation, and 90% stenosis in segment 7 of the LAD. Transradial percutaneous coronary intervention (PCI) was initially performed for the LCX lesion, and a drug-eluting stent was implanted.

Consecutive NIRS-IVUS evaluation of the untreated LAD lesion revealed a maxLCBI_{4mm} of 550. The baseline low-density lipoprotein cholesterol (LDL-C) was 140 mg/dL, and staged PCI for LAD was planned after aggressive lipid-lowering strategy. Statin, ezetimibe, and PCSK9 inhibitor were initiated, and the LDL-C level had markedly decreased to 12 mg/dL two months later. At staged PCI, NIRS-IVUS of the matched LAD segment showed a reduction in maxLCBI_{4mm} from 550 to 505. After pre-dilation with a 2.5-mm cutting balloon, the lesion was successfully treated with a 2.5mm drug-coated balloon.

This case suggests that NIRS-IVUS may provide insight into early changes in coronary plaque modification during rapid and intensive lipid-lowering therapy.