How Do Coronary Lipid-Rich Plaques Change After Cessation of Proprotein Convertase Subtilisin/Kexin Type 9 Inhibitors? — Serial Assessment Using Near-Infrared Spectroscopy —

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Regarding patients who required stopping proprotein convertase subtilisin/kexin type 9 inhibitors (PCSK9i), we evaluated the serial change of coronary lipid-rich plaques at baseline, after administration of PCSK9i and after cessation of PCSK9i, using near-infrared spectroscopy (NIRS)-intravascular ultrasound (IVUS). This study included the following patients: (1) patients who were administered PCSK9i; (2) then patients who were required to stop taking PCSK9i; and (3) patients who needed their coronary stenosis to be evaluated by serial angiography and NIRS-IVUS because they had vulnerable plaques at baseline and had concerns that the vulnerable plaques might progress after PCSK9i and cessation of PCSK9i. Written informed consent was obtained from all patients. The study protocol complied with the Declaration of Helsinki and was approved by Ethical Committee of Gifu Heart Center (No.2020010 [UMIN No.000041925]).

The NIRS-IVUS (TVC Imaging System, Infraredx) was used for obtaining the maximum value of the lipid-core burden index for any 4-mm segment (maxLCBI4 mm) and plaque burden at maxLCBI4 mm site. Serial assessments were performed by using a paired Wilcoxon signed-rank test adjusted by Holm with a statistical significance of P<0.05. From May 2017 to July 2020, 11 vessels from 7 patients were included and evaluated. The baseline characteristics of patients are shown in Supplementary Table. The dose of statin therapy was consistent during the study periods (Figure A). The maxLCBI4 mm decreased during the administration of PCSK9i (median 348 at baseline to 110 at 9 months, P=0.003), and was maintained after cessation (median 21, P=0.141) (Figure B). Plaque burden decreased in each observation (53.0%, 49.0%, and 48.0%, P=0.012 and 0.030, respectively). The low-density lipoprotein cholesterol level decreased during administration of PCSK9i, and rebounded after its cessation (112 mg/dL, 44 mg/dL, and 103 mg/dL, P=0.048 and 0.048, respectively). The present study has limitations of small sample size and single-center retrospective study for short periods with non-randomization.

Sources of Funding / Disclosures
None.

Data Availability
The deidentified participant data will not be shared.

References

Supplementary Files
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