Target lesion evaluation by multiple modalities *in vivo*: near-infrared spectroscopy (NIRS), virtual histology intravascular ultrasound, optical coherence tomography, and angioscopy

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A 60-year-old man presented with ischaemic heart failure. We conducted coronary angiography (CAG) after improvement of the heart failure. On CAG, there was a hazy stenosis in the proximal left anterior descending artery **(Figure 1, Moving image 1)**. The lesion was observed by four modalities: near-infrared spectroscopy (NIRS), virtual histology intravascular ultrasound (VH-IVUS), optical coherence tomography (OCT), and angioscopy. NIRS detected lipid core plaque with echolucency on greyscale IVUS. VH-IVUS showed necrotic core plaque **(Figure 1, Moving image 1)**. OCT showed lipid-rich plaque, and angioscopy showed yellow intima **(Figure 1, Moving image 1)**. All modalities could detect lipid content and had acceptable compatibility. A previous report demonstrated that the position of the yellow plaque observed by angioscopy was in agreement with the position denoted by yellow shown in NIRS. Greyscale IVUS-detected attenuated and echolucent plaques have been reported to indicate the presence of NIRS-detected lipid core. This case illustrates the valuable data obtained by these coronary imaging devices, including NIRS, and highlights their potential clinical applications.

Conflict of interest statement

The authors have no conflicts of interest to declare.

Supplementary data

Moving image 1. Video of the target lesion by near-infrared spectroscopy, virtual histology intravascular ultrasound, and optical coherence tomography.
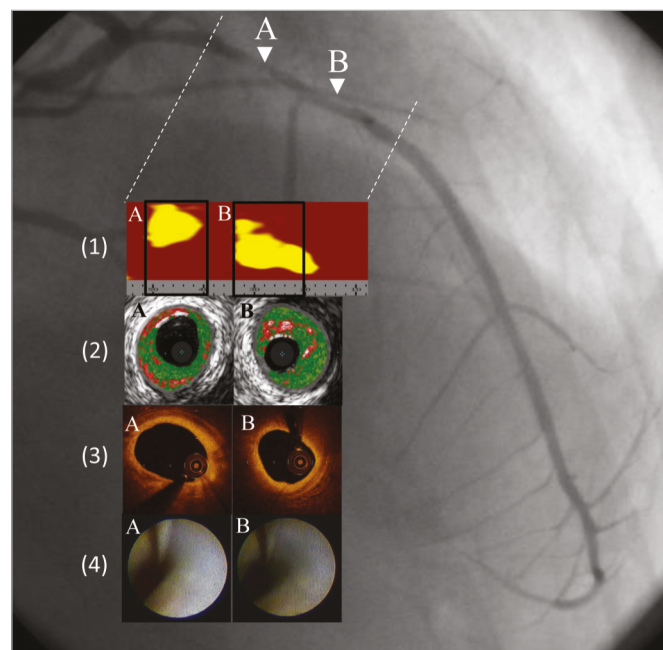

Figure 1. *Detection of lipid plaque by near-infrared spectroscopy, virtual histology intravascular ultrasound, optical coherence tomography, and angioscopy. The angiogram showed the lesion in the proximal left anterior descending coronary artery. Chemogram of near-infrared spectroscopy (1), virtual histology images (2), OCT images (3), and angiographic images (4) at locations A and B.*

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