VIA MEDICA

IMAGE IN CARDIOVASCULAR MEDICINE

Cardiology Journal
2021, Vol. 28, No. 5, 794–795
DOI: 10.5603/CJ.2021.0091

ISSN 1897–5593
eISSN 1898–018X

The effectiveness of drug-coated balloons for two dissimilar calcific lesions assessed by near-infrared spectroscopy intravascular ultrasound and optical coherence tomography

Takao Konishi[1], Kohei Saiin[1], Youji Tamaki[1], Hiroyuki Natsui[1], Tomoya Sato[1], Sakae Takenaka[1], Atsushi Tada[1], Yoshifumi Mizuguchi[1], Yuta Kobayashi[1], Hirokazu Komoriyama[1], Yoshiya Kato[1], Takuma Sato[1], Rui Kamada[1], Kiwamu Kamiya[1], Toshiyuki Nagai[1], Shinya Tanaka[2], Toshihisa Anzai[1]

[1]Department of Cardiovascular Medicine, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, Sapporo, Japan
[2]Department of Cancer Pathology, Faculty of Medicine, Hokkaido University, Sapporo, Japan

A 63-year-old woman, who had undergone an everolimus-eluting stent implantation in the middle right coronary artery (mRCA) 3 years ago, was referred to our hospital for chest pain. Coronary angiography revealed 90% stenosis of the proximal right coronary artery (pRCA, Fig. 1A, white arrow) and mRCA (Fig. 1A, white arrowhead). Near-infrared spectroscopy-intravascular ultrasound (NIRS-IVUS) showed a fibro-fatty plaque (thick yellow arrow) with deep calcification (thin yellow arrow) in the pRCA (Fig. 1B, a). A calcified nodule (yellow arrowhead) was found in the mRCA (Fig. 1B, b). Angioplasties with paclitaxel-coated balloons 3.5/15 mm and 3.0/20 mm intra-stent were performed for pRCA and mRCA, respectively. Final angiography showed no significant RCA stenosis (Fig. 1C). However, 6 months later, significant in-stent restenosis was observed (Fig. 1D). Optical coherence tomography (OCT) showed no significant restenosis in the pRCA (Fig. 1E, c). Meanwhile, a calcified nodule protruding intra-stent was detected in the mRCA (Fig. 1E, d, yellow arrowhead). Recent studies have shown that the stent-less strategy using drug-coated balloon (DCB) might be an effective option for calcific lesions in patients with coronary artery disease. Paclitaxel-coated balloon can inhibit the growth of smooth muscle cells, thus inhibiting neointimal proliferation. This case highlighted that DCB treatment was more effective for deep calcification with superficial fibrous plaques than for calcified nodules. NIRS-IVUS and OCT were useful for identifying different types of coronary calcifications and for predicting the effectiveness of DCB treatment.

Conflict of interest: None declared

Address for correspondence: Takao Konishi, MD, PhD, Department of Cardiovascular Medicine, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, West 7, North 15, Kita-ku, Sapporo, 060-8638, Japan, tel: 011-706-6973, fax: 011-706-7874, e-mail: takaokonishi0915@gmail.com

Received: 28.03.2021 Accepted: 7.06.2021

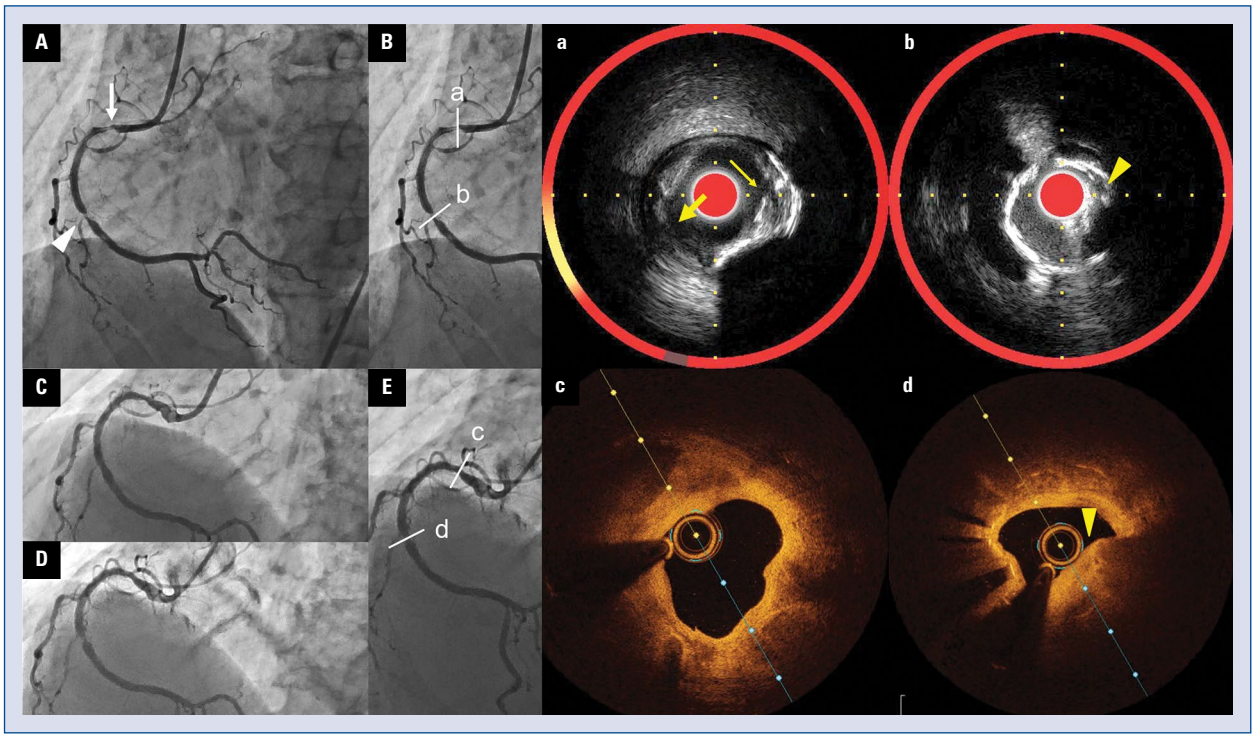

Figure 1. A. The initial coronary angiogram (CAG); **B.** Near-infrared spectroscopy-intravascular ultrasound; **C.** Final CAG; **D.** CAG at 6 month-follow-up; **E.** Optical coherence tomography.