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CASE REPORT

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A case of a newly developed yellow neointima at stent implanted site 1 year after sirolimus-eluting stent placement

Angioscopic findings

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KEYWORDS

Sirolimus-eluting stent;
Angioscopy;
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Abstract Coronary angioscopy is a useful tool for understanding plaque characteristics through the plaque color and surface thrombus formation. We experienced an interesting case of a newly developed yellow neointima 400 days after a sirolimus-eluting stent implantation. A 72-year-old woman suffering from angina pectoris was admitted to our hospital. Coronary angiography revealed severe stenosis at the proximal left descending artery and she was implanted with a sirolimus-eluting stent. Coronary angioscopic observation immediately after stent implantation revealed the presence of yellow plaque only at the most severe stenosis lesion in the stent placement site. We performed a coronary angiography 400 days after the sirolimus-eluting stent implantation and did not find an in-stent restenosis. An intravascular ultrasound indicated minimum neointimal formation. By coronary angioscopy, we could clearly observe that the neointima had covered the surface of the stent struts; the stent struts were barely visible under the neointima. Surprisingly, neointima formed in response to the sirolimus-eluting stent was entirely yellow. Precise mechanisms of producing yellow neointima was unknown, we may observe a pathologic neointima induced by sirolimus-eluting stent.

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Introduction

Recently, drug-eluting stents have been broadly available and the “Achilles heel” of a percutaneous coronary intervention (PCI) as in-stent

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restenosis has almost been resolved. This is because the restenosis rate caused by a drug-eluting stent has been found to be below 10% [1–3]. However, a new problem has arisen due to the use of drug-eluting stents. Late stent thrombosis, a life-threatening complication, has emerged as a major safety concern [4]. Virmani et al. [5] reported that the late stent thrombosis could be caused by a localized hypersensitivity vasculitis that is induced by remnant stent polymer. It is thought to be difficult to detect such an inflammatory response at a stent implanted site in living patients.

Coronary angiography (CAS) is available in Japan; using this modality may enable the detection of plaque pathological response after sirolimus-eluting stent (SES) implantation in living patients [6]. In this paper, we report an interesting case of a newly developed yellow neointima at the stent implanted site 1 year after a SES placement observed by CAS.

Case report

A 72-year-old woman, who was suspected to be suffering from angina pectoris, was admitted to our hospital. Subsequent coronary angiography (CAG) revealed a severe stenosis at the proximal left descending artery (black arrow in Fig. 1A). One week after the administration of aspirin (100 mg/day) and ticlopidine (200 mg/day), a SES (Cypher™; Johnson & Johnson, Tokyo, Japan, diam-

eter: 3 mm; length: 28 mm) was implanted at the proximal left descending artery (Fig. 1B). Immediately after SES implantation, we performed a CAS by using the FT-203 (Fibertech, Tokyo, Japan) angioscope and the AS-003 (Fibertech, Tokyo, Japan) optic fiber. The angioscopic observation revealed that plaque color of the distal to middle portions of the SES were white (Fig. 2D1 and D2), the proximal portion, which was the most severe stenosis site, was yellow (Fig. 2D3), and the proximal edge of the SES was white with red thrombus (black arrow in Fig. 2D4). After the procedure, she was relieved from the effort angina. In order to observe the SES patency, we performed the CAG 400 days after the SES implantation under administration of dual antiplatelet therapy. We did not find any angiographic in-stent restenosis (Fig. 1C). An intravascular ultrasound (IVUS) indicated minimum neointimal formation (white arrows in Fig. 2E). A CAS revealed that the neointima had covered the surface of the stent struts; the stent struts were not distinctly visible under the neointima (black arrows in Fig. 2F). Surprisingly, the neointima response to the SES was completely yellow.

Discussion

This is the first report of yellow neointimal coverage on the surface of the stent struts observed by CAS after SES implantation in a living patient.

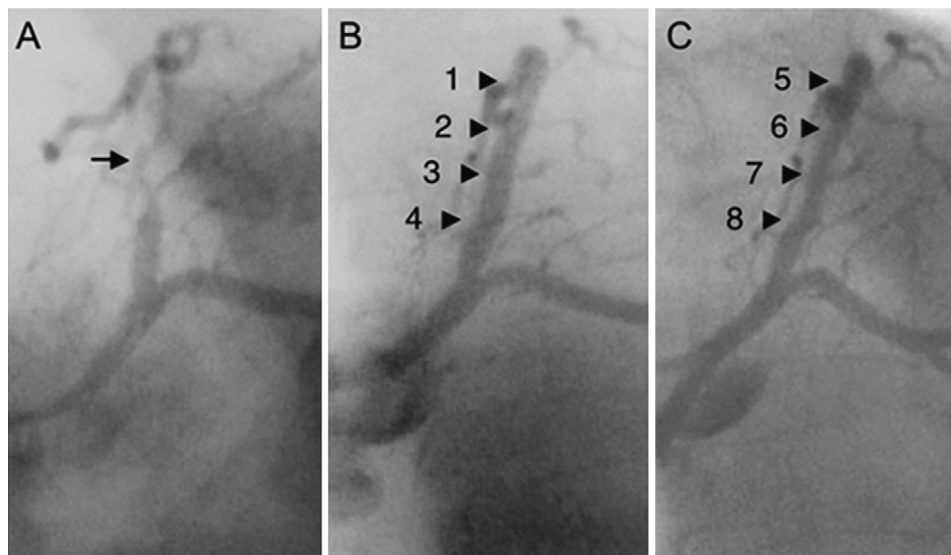


Fig. 1 Coronary angiograms obtained in LAO 45° and CAUD 30° projections. (A) Prior to a intervention, a severe stenosis at the proximal left descending artery was observed (black arrow). (B) Immediately following sirolimus-eluting stent implantation. (C) Obtained 400 days after intervention; no in-stent restenosis was observed. In (B) and (C), the portions designated by the black arrowheads with numbers correspond to the images in Fig. 2.

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