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Case Report

Very late stent thrombosis at 2.5 years after sirolimus-eluting stent implantation with prior angioscopic image of culprit lesion: A case report

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Very late stent thrombosis;
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Summary Although very late stent thrombosis after drug-eluting stent implantation is a critical event, its cause has not been clarified. This is the first report of a case with very late stent thrombosis after drug-eluting stent implantation for which prior angioscopic image of the culprit lesion is available.

A 54-year-old Japanese male patient with stable angina who received implantation of sirolimus-eluting stent at the culprit lesion and 1-year follow-up angiographic and angioscopic examinations came back with chest pain at rest at 2.5 years after the stent implantation. Very late stent thrombosis was diagnosed by emergent angiographic and angioscopic examinations and was treated by zotarolimus-eluting stent. One-year angiographic and angioscopic follow-up examinations after zotarolimus-eluting stent were performed. Angioscopy revealed uncovered stent strut, yellow plaques, and thrombus at 1-year follow-up after sirolimus-eluting stent implantation, and it confirmed the thrombotic occlusion inside the sirolimus-eluting stent at the time of emergent catheterization.

This is a case of very late stent thrombosis in the drug-eluting stent where uncovered stent strut, yellow plaques, and thrombus had been detected by angioscopy 1.5 years before the onset. Those thrombogenic sources might be the cause of stent thrombosis.

Introduction

Drug-eluting stents (DES) dramatically reduced restenosis compared with bare metal stents (BMS). However, it was shocking that stent thrombosis (ST) increased at the continuous rate of 0.6% per year. Although the incidence of ST is

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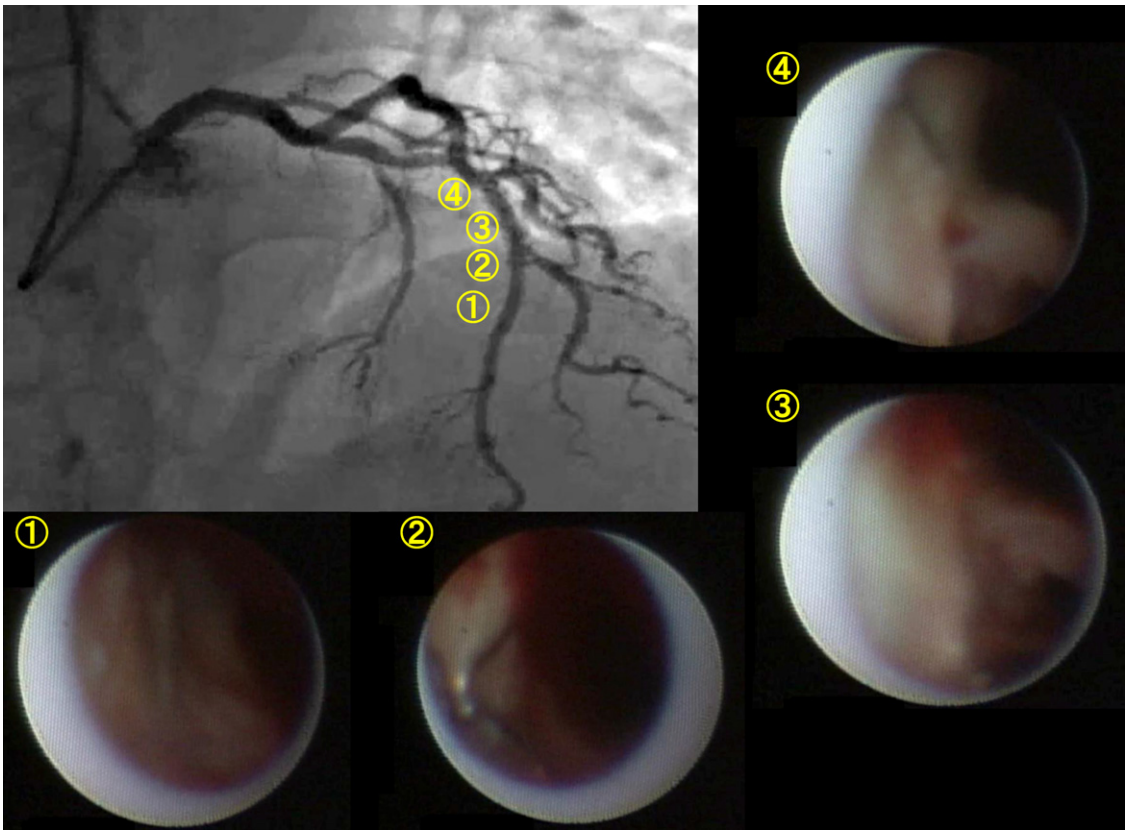

Figure 1 Angiographic and angioscopic images at 1-year follow-up after sirolimus-eluting stent implantation. A 54-year-old Japanese male patient with stable angina who received implantation of sirolimus-eluting stent at the chronic total occlusion lesion in the mid left anterior descending artery received 1-year follow-up examinations. Peri-stent staining was detected by angiography. Yellow plaques, uncovered stent strut, and thrombus were detected at the stented lesion by angioscopy. Yellow plaques were present both inside the stented lesion and its proximal segment. They were accompanied by the mural red and white (mixed) thrombus adhesion. The stent struts were mainly covered by the thin layer of neointima and/or white thrombus but were partly uncovered with its metallic glistening. The malapposition of stent struts was not detected by angioscopy.

very rare, it is critical once it has occurred. ST is supposed to be caused by various factors such as cessation of dual antiplatelet therapy (DAPT), stent incomplete apposition, and inadequate formation of neointima. On the other hand, the direct cause of thrombus formation [1] is supposed to be an exposed stent metal or disrupted yellow plaques that are also a cause of acute coronary syndrome (ACS). Yellow plaques have been associated with vulnerable plaques and high thrombogenic potential [2]. Furthermore, the future risk of ACS events has been associated with the number of yellow plaques in a coronary vessel [3]. Those disrupted yellow plaques, exposed stent, and thrombus can be detected by angioscopic examination. Therefore, those angioscopic findings might be predictors of ST.

We experienced a patient with very late ST (VLST) at 2.5 years after DES implantation in whom angiographic and angioscopic examinations had been performed at one year after implantation. Furthermore, the VLST was treated by a different type of DES and angiographic and angioscopic one-year follow-up was again performed, which revealed different healing response of neointima formation in the same patient after the first and the second DES implantation. This is the first report of a DES VLST case in which prior angioscopic images of the lesion are available.

Case report

A 54-year-old Japanese male patient with stable angina received percutaneous coronary intervention (PCI) and implantation of sirolimus-eluting stent (SES) at the chronic total occlusion lesion in the mid left anterior descending artery. One-year follow up was performed with angiographic and angioscopic examinations (Fig. 1). Peri-stent staining was detected by angiography. Yellow plaques, exposed stent, and thrombus were detected at the stented lesion by angioscopy.

He came back with chest pain at rest 1.5 years later, which was 2.5 years after the implantation of the SES. Although no abnormality in electrocardiography was observed, the elevation of serum troponin T was detected. We performed emergent catheterization and found coronary occlusion at the stented lesion by angiography. After thrombus aspiration, we performed angioscopic examination and found thrombus directly adhering to the vessel wall inside the stented lesion, which could confirm this event as VLST and deny the possibility of new lesion ACS event outside but adjacent to the stent that could not be differentiated by angiography alone (Fig. 2). We performed PCI at the lesion again and implanted a zotarolimus-eluting stent (ZES)