

The Cypher stent (Johnson & Johnson, Cordis), approved in Japan in August 2004, was used to treat her. When she was admitted to our hospital, she again complained of chest pain on effort and CAG revealed severe narrowing had reappeared at her LMCA (Figure 2). We electively planned to dilate her LMCA lesion with the culottes stenting technique by using 2 Cypher stents and electively treated her 3 days later.<sup>2)</sup> After the LMCA was engaged with a 7Fr JL4.0ST Brite-tip guiding catheter (Johnson & Johnson, Cordis) via her right femoral artery, a 0.014" Runthrough-NS floppy guidewire (Terumo) and a 0.014" Hi-torque balance middleweight guidewire (Guidant) easily crossed the lesion toward her LAD and left circumflex coronary artery (LCX), respectively. Preprocedural intravascular ultrasonography (IVUS) with a 2.5Fr Atlantis-SR Pro imaging catheter (SciMed, Boston Scientific) was performed. IVUS images revealed that the previously implanted S670 stent was fully expanded and the stent diameter was about 5.8 mm, and that the intrastent lumen was occupied by a massive amount of hyperplastic neointima. Without predilatation, a 3.5 × 23 mm Cypher stent was delivered and placed onto the native LMCA extending over her proximal LCX. The Hi-torque balance middleweight guidewire inserted into her LCX was partially removed and advanced to her LAD through the stent cell. The Runthrough-NS floppy guidewire was completely removed and advanced to her LCX. We advanced a 3.0 × 20 mm Maverick-2 balloon catheter (SciMed, Boston Scientific) along the Hi-torque balance middleweight guidewire, positioned it across the stent cell, and dilated it to expand the cell. Next, we delivered a 3.5 × 18 mm Cypher stent across the expanded stent cell toward the LAD and placed it onto her native LMCA extending over the proximal LAD. Again, the Hi-torque balance middleweight guidewire inserted into the LAD was partially removed and advanced to the LCX through the stent cell. The Runthrough-NS floppy guidewire was completely removed and advanced to her LAD. Then, we again advanced the previously used 3.0 × 20 mm Maverick-2 balloon catheter toward the LCX, positioned it across the stent cell, and dilated it. In order to perform adequate postdilatation with an alternative kissing balloon technique, we advanced a 5.0 × 20 mm Maverick-XL balloon catheter and dilated it within her LMCA, proximal LAD, and proximal LCX. Finally, full expansion of the 2 Cypher stents was confirmed with both CAG and IVUS to complete the procedure (Figure 3).

She was discharged the day following the procedure and has not complained of any angina since. Another CAG performed 6 months after the procedure showed no restenosis of the stented segments (Figure 4).

## DISCUSSION

Takayasu's arteritis or pulseless disease is a chronic and progressive inflam-

matory vasculitis that usually occurs in young women and is characterized by stenosis or obliteration of large and medium sized arteries, and its early morbidity and/or mortality results from ischemia of vital organs.<sup>3,4)</sup> Coronary artery disease is not a rare involvement of arteritis and its incidence has been reported to be 9-10%,<sup>4,5)</sup> however, the ratio is usually derived from autopsy studies. The actual clinical manifestation appears to be relatively unappreciated because coronary artery disease is not evident in most cases until the occurrence of angina or myocardial infarction.<sup>5,6)</sup> Matsubara and colleagues classified coronary lesions involved in arteritis into 3 types on the basis of pathological features and reported that stenosis or occlusion of the ostia and proximal segments of the coronary tree were most commonly seen.<sup>5)</sup> In those diseased vessels, the extension of the inflammatory processes of the intimal proliferation and contraction of the fibrotic media and adventitia from the ascending aorta cause luminal narrowing.<sup>5)</sup> In our patient, a significant narrowing occurred at her LMCA even after it was separated from her native ascending aorta due to the Bentall operation. The aforementioned classification of Matsubara, *et al* includes focal coronary arteritis, so-called skip lesions, therefore, her LMCA lesion possibly corresponded not to typical extending disease from the aorta but to the skip lesion.<sup>5)</sup>

There have been few reports regarding transcatheter treatment of coronary artery disease resulting from arteritis. The most likely reason is that lesion location is usually ostial or proximal coronary segments like the LMCA, which are unsuitable for percutaneous angioplasty. Moreover, blood access sites would be limited in many cases if morbid changes occur at main branches of the aorta such as the iliac, subclavian, and innominate arteries. Aortic disease itself, like aneurysm, might disturb intraaortic catheter manipulation.

We encountered a young patient enduring considerable suffering who received LMCA stenting after a failed MIDCAB operation and many transcatheter revascularizations. We successfully treated her using sirolimus-eluting stents with the culottes stenting technique and obtained satisfactory chronic phase patency of the treated vessels. During the procedure, IVUS revealed that the stent deployed at her LMCA was fully expanded. That is, the stent prevented vessel contraction of the fibrotic media and adventitia. However, adequate steroid therapy unfortunately could not prevent intimal proliferation, which is one of the main causes of coronary narrowing resulting from arteritis.

Chronic phase restenosis is one of the weak points of percutaneous coronary intervention therapy. Every improvement in the interventional procedure and oral systemic pharmacological intervention have failed to achieve satisfactory results regarding the chronic phase patency of treated vessels after transcatheter coronary intervention. Recently, local drug delivery using drug-eluting stents has been proven to have encouraging results with respect to the prevention of instant

restenosis. Many investigators have already reported that SES, which is one of the better known drug-eluting coronary stents, is quite effective for not only the treatment of simple coronary narrowing like Stress/Benestent lesions but also that of complex stenosis like LMCA-stenosis, bifurcation lesions, and diffuse long stenosis.<sup>7-15)</sup> However, all of these lesions treated in previous clinical studies were caused by atherosclerosis.

Takayasu's arteritis often afflicts young Asian women, and the number of white patients afflicted is small.<sup>16)</sup> This most likely accounts for the reason there have been few reports on whether SES placement is effective against coronary artery stenosis caused by arteritis. As discussed by Furukawa and colleagues, the pathological features of diseased vessels in Takayasu's arteritis is predominant infiltration of various kinds of immunocytes.<sup>17)</sup> It is well known that sirolimus has potent immunosuppressive effects although it was originally developed as an antibiotic agent. Therefore, this pharmacological function of SES brings excellent short- and mid-term vessel patency after its placement, however, it is unknown whether this good mid-term finding can extend to a long-term effect after sirolimus coated on the stent struts is completely diffused in the same way as its placement to treat simple atherosclerosis.

We have described a case of LMCA disease resulting from arteritis, and SES was quite efficacious against the intimal hyperplasia. However, long-lasting observation is essential since most patients with Takayasu's arteritis are young and the arteritis is a progressive disease in nature. We are able to conclude, however, that SES placement is a potent candidate for revascularization whose aim is to free arteritis patients from myocardial ischemia.

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