Successful Treatment of Spontaneous Coronary Artery Dissection With Cutting Balloon Angioplasty as Evaluated With Optical Coherence Tomography

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A previously healthy 47-year-old pre-menopausal woman without any risk factors was admitted to our hospital with severe chest pain. Urgent coronary angiography showed a totally occlusive lesion in the middle of the left anterior descending coronary artery (LAD) with Thrombolysis In

Figure 1. Coronary Angiography and IVUS Images of the LAD Before Angioplasty

Emergent coronary angiography shows total occlusion in the middle of the left anterior descending coronary artery (LAD). Normal proximal LAD is shown in A. Intravascular ultrasonography (IVUS) shows an extensive intramural hematoma that compresses the true lumen of the LAD throughout the length of the middle to distal LAD (B to D). FL = false lumen.

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Myocardial Infarction (TIMI) flow grade 0. The other coronary arteries appeared normal. Immediate percutaneous coronary intervention (PCI) was performed because of ongoing chest pain and persistent ST-segment elevation. Intravascular ultrasonography showed an extensive intramural hematoma (Fig. 1) and confirmed the presence of spontaneous coronary artery dissection (SCAD). We performed a cutting balloon angioplasty to create communication between the true and false lumens, reduce the compression, and restore the distal coronary flow. We used a 2.5-mm cutting balloon dilated to 2 atm in the distal segment and 4 atm in the proximal segment. After ballooning, coronary flow was immediately restored to TIMI flow grade 3. Optical coherence tomography (OCT) confirmed that the incisions on the dissected intima corresponded with the blade shape and that communications were successfully made between the false and true lumens (Fig. 2). The patient recovered uneventfully without any complications. Follow-up coronary angiography at 6 months revealed good patency of the LAD. OCT showed healing of the dissection with adequate intimal thickness, although a residual partial false lumen remained in the distal segment (Fig. 3). The use of PCI for the treatment of SCAD is generally associated with a high complication rate (1). In this case, cutting balloon angioplasty was effective to immediately...
restore coronary flow, and good healing was documented at follow-up.

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Figure 3. Coronary Angiography and OCT Images at Follow-Up

Normal proximal LAD is shown in A. OCT demonstrates healing of the dissection; the healed intima appears relatively thick (B and C). A small partial false lumen remains distally (D). *Wire artifact. Abbreviations as in Figures 1 and 2.

REFERENCE


Key Words: acute myocardial infarction ■ cutting balloon ■ spontaneous coronary artery dissection.