

Recurrent spontaneous dissection affecting different coronary arteries of a young female

Necip Ermiş, Erdoğan Yaşar¹, Mehmet Cansel
Department of Cardiology, İnönü University, Turgut Özal Medical Center, Malatya-Turkey

Introduction

Spontaneous coronary artery dissection (SCAD) is a rare but potentially lethal event that was first described in 1931 in the autopsy of a 42-year-old woman (1). The incidence is highly variable, typically ranging from 0.07% to 1.1% of patients who are referred for cardiac catheterization (2, 3).

Although SCAD often presents as an acute coronary syndrome, its pathophysiology is completely different in patients with SCAD compared with atherosclerosis or plaque rupture. There is little information regarding etiology, management, and outcomes of SCAD. Here we present a case of recurrent SCAD in different coronary arteries at a 1-year interval.

Case Report

A 31-year-old female presented with complaints of continuous burning chest pain radiating into the left arm that was associated with dyspnea since 2 h. She had no prior medical problems and cardiac risk factors. Moreover, she was neither pregnant nor in the post-partum period. Because an electrocardiogram revealed acute anterolateral myocardial infarction, she was admitted to the catheterization laboratory. Urgent coronary angiography revealed a dissection of the proximal-mid left anterior descending artery (LAD) with complete occlusion (Fig. 1a). The circumflex (Cx) and right coronary artery (RCA) were normal (Fig. 1b).

Following balloon predilatation, multiple overlapping everolimus-eluting stents (EES; 3.0x24 mm; 2.75x30 mm; and 2.75x22) were implanted (Fig. 2a) in LAD. The procedure was completed following normal coronary flow with a resolution of chest pain and ST elevation on ECGs.

After 1 week, she became breathless and was found to have pulmonary edema, which was treated with vasodilators and diuretics. A repeat angiogram revealed persistent flow-limiting dissection of the major diagonal branch and 60%–70% persistent narrowing of the proximal LAD despite repeated intracoronary 200- μ g nitrate administration (Fig. 2b). RCA and Cx were still normal. Although we did not perform intravascular ultrasound or optical coherence tomography for detailed analysis, prior stenting of LAD for long SCAD and ongoing hemodynamic instability led us to believe that probable intramural hematoma is the cause of persistent narrowing of proximal LAD. She underwent successful bypass surgery to spare her vessels with a saphenous vein graft to the diagonal branch and left internal mammary artery (LIMA) to LAD.

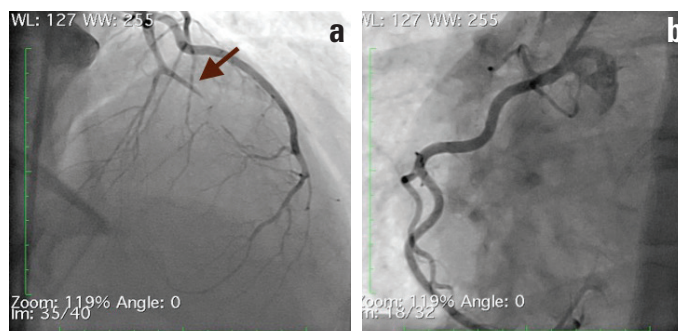


Figure 1. First presentation: pre-intervention, baseline coronary angiography demonstrating SCAD of LAD with totally occlusion (a) and normal RCA (b)

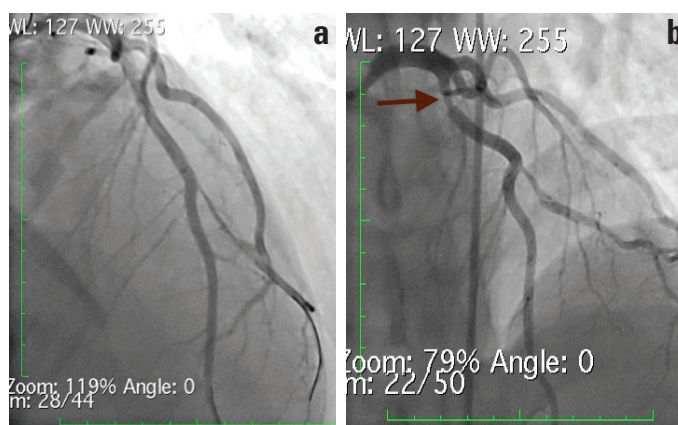


Figure 2. Immediate result of multiple overlapping everolimus-eluting stents implantation in LAD (a) and 1 week after pre-stent narrowing of the proximal part of LAD (arrow indicates 60%–70% narrowing), which is highly probable because of propagated intramural hematoma (b)

The patient presented again 1 year later with a further episode of severe chest pain. This time, ECG revealed an inferior ST segment elevation that was consistent with acute inferior myocardial infarction. Urgent coronary angiography revealed that the proximal LAD and overlapping coronary stents were now normal (Fig. 3a), and all the grafts were patent (Fig. 3 a, b). There was a long dissection of RCA with total occlusion of the posterior descending artery (Fig. 4a). The patient underwent primary percutaneous coronary intervention; EES, measuring 3.0x16 mm and 2.75x32 mm, were implanted in the proximal and mid-part of RCA (Fig. 4b). The procedure was well tolerated leading to the restoration of normal blood flow. Hospital course was uneventful, and she was discharged on the fourth day.

Discussion

For our patient, recurrent dissection occurred in a different coronary artery (RCA) where the prior angiography for the first event demonstrated an entirely normal lumen. The incidence of recurrent SCAD is unknown, and there are some series indicating that patients with SCAD are at a risk for recurrent events with varied reported recurrence rates ranging from 10% to 30%. Most recurrent dissections occur in a different coronary segment from the index event (4).

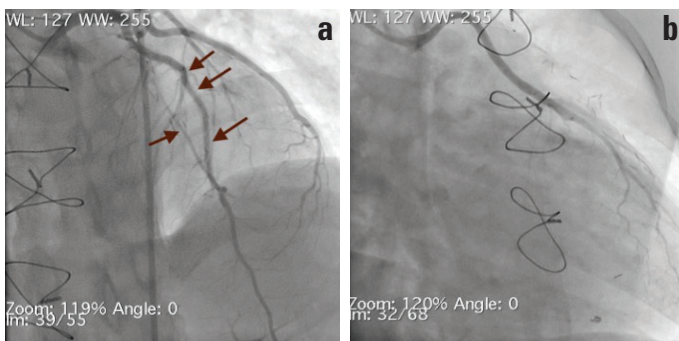


Figure 3. Coronary angiography demonstrating patent prior to stent implantation and healed proximal pre-stent LAD, without residual stenosis with patent LIMA-LAD (arrows, a) and saphenous graft to the diagonal branch (b)

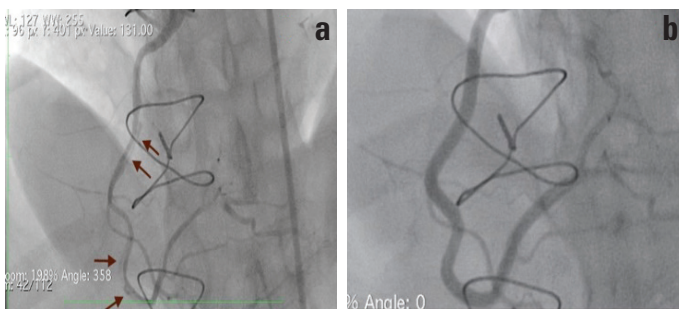


Figure 4. Pre-intervention coronary angiography demonstrating SCAD from proximal to distal RCA (arrows indicate false lumen and intimal flap, a) and final result of two overlapping everolimus-eluting stent implantation to the proximal and mid-part of RCA (b)

No specific guidelines exist to treat SCAD. Emergent angiography appears to play a pivotal role for early recognition of the underlying diagnosis and recovery (5–7). Both primary conventional medical management for acute coronary syndrome and primary stent deployment are associated with early recurrence. Tweet et al. (8) retrospectively evaluated the result of different treatment strategies of 189 patients with first-time SCAD episode, and they recommend conservative medical treatment if the patient had a normal blood flow in an affected coronary artery and revascularization if the blood flow was restricted.

Although revascularization and medical treatment do not prevent a second SCAD episode for our patient, we believe that it is logical to recommend revascularization using cautious PCI if a single medium- to large-sized vessel is involved and if the artery has reduced blood flow. CABG should be preferred in patients who have multivessel dissection, left main dissection, new-onset heart failure, or hemodynamic instability (6). Medical treatment is suitable for a small- to medium-sized vessel if the vessel has good blood flow and the patient is hemodynamically stable.

Conclusion

In patients with SCAD, recurrence should be considered as a potential risk and these patients should be successfully managed according to blood flow, vessel size–number included, and hemodynamic stability.

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Address for Correspondence: Dr. Necip Ermiş
İnönü Üniversitesi Turgut Özal Tıbbi Merkezi,
Kardiyoloji Bölümü, 44280 Malatya-Türkiye
Phone: +90 422 341 06 60 ext: 4508 E-mail: necipermis@yahoo.com

Accepted Date: 06.11.2015

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DOI:10.14744/AnatolJCardiol.2015.6648



Combined implantation of dual-chamber ICD and optimizer through a persistent left superior vena cava

Fabian Fastenrath^{1,2}, Susanne Röger^{1,2}, Ibrahim Akın^{1,2}, Martin Borggreffe^{1,2}, Jürgen Kuschyk^{1,2}

¹Medical Faculty Mannheim of the University of Heidelberg, 1st Department of Medicine (Cardiology, Angiology, Pneumology and Intensive Care), Mannheim-Germany

²DZHK (German Centre for Cardiovascular Research) partner site Mannheim-Germany

Introduction

Cardiac contractility modulation (CCM) is a relatively new treatment for patients with an advanced heart failure having reduced left ventricular ejection fraction (LVEF), which is particularly indicated in patients with a sinus rhythm, narrow QRS complex,