

CASE REPORT

How To Treat Spontaneous Coronary Artery Dissection

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ABSTRACT

Spontaneous coronary artery dissection (SCAD) is a rare disease, occurring most often in young women, around 40 years of age. Usually there is the presence of several predisposing factors. Diagnosis is made using coronary angiography, optical coherence tomography (OCT) or autopsy. Optical coherence tomography allows a precise diagnosis to be made, identifying as it can, a coronary artery intramural haematoma prior to the occurrence of a dissecting lesion. The case of a 52 year-old woman with SCAD of unknown etiology is reported.

Keywords: coronary artery dissection, young women, coronary angiography, optical coherence tomography

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INTRODUCTION

Spontaneous coronary artery dissection (SCAD) is a rare and interesting disease, occurring most often in young women, around 40 years of age, most often peripartum, postpartum or after extreme physical stress. These women present with no risk factors associated with coronary artery disease (CAD). Clinical manifestation of the disease occurs in 50% of ST elevation myocardial infarction (STEMI), with a mortality varying between 20% and 40%. A recent paper reported that sudden death is associated with this disease in 27% of cases.¹

The pathogenesis of the disease has yet to be fully elucidated. Possible causes are pregnancy generated degeneration of collagen, increased levels of female hormones, eosinophilangitis, fibromuscular dysplasia, binder tissue diseases, Marfan syndrome or extreme physical stress.

A diagnosis is usually made following coronary angiography, optical coherence tomography (OCT) or autopsy. The most frequently affected artery in women is the left anterior descending artery (LAD), while in men, the right coronary artery (RCA) is the most affected.²



FIGURE 1. TIMI III flow and no atherosclerotic lesions in the left coronary artery (A) or right coronary artery (B).

A review of the literature indicates conflicting and ambiguous recommendations concerning appropriate treatment of this disease. Conservative therapy is recommended in approximately 50% of cases, consisting of the prescription of anticoagulants, antiplatelets, statins, ni-

trates or immunosuppressants. Invasive therapy is recommended in the other 50% of cases, consisting of stenting or coronary artery bypass grafting (CABG).

For the last 50 years, only isolated reports of cases have been published and no randomized controlled trials addressed this disease.

Data of the Mayo Clinic Register indicate that 80% of females diagnosed with SCAD have a mean age of 42 years.

All arteries can be involved, including the left main coronary artery (LM), however there were no atherosclerotic lesions documented on angiography performed in these cases. Multivessel SCAD has been described in 15–20% of all patients. Interestingly, reSCAD occurs most frequently in women, and even triple SCAD has been documented.³ CAD present clinically as acute coronary syndromes where 50% of cases have an ST segment elevation acute myocardial infarction. Risk factors are peripartum women and extreme physical activity in men.

Early invasive treatment with percutaneous coronary intervention (PCI) has been associated with a high rate of periprocedural complications such as inability to bridge the dissection with a coronary wire, propagation and extension of the dissection, slow-flow phenomenon and intramural hematoma. The most precise diagnosis is made using OCT, which can identify an intramural haematoma even before a dissecting lesion occurs. For these reasons, the current recommendation is for conservative treatment as initial therapy, avoiding urgent percutaneous interven-



FIGURE 2. Persisting dissection of the coronary artery indicated by coronary angiography

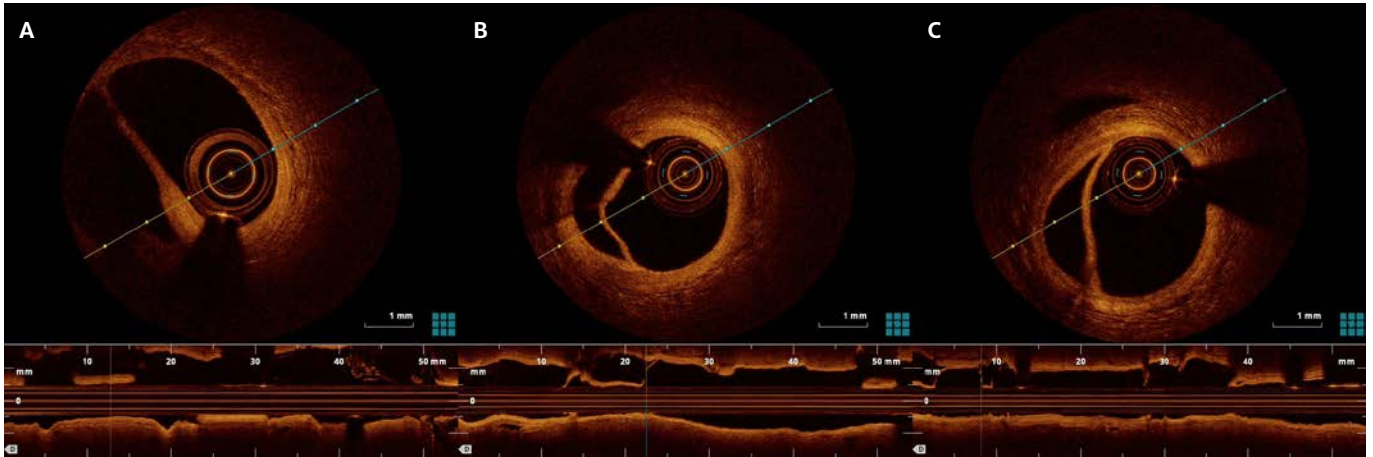


FIGURE 3. OCT showed multiple dissections in the affected artery

tion in these cases.⁴ We present the case of a 52 year-old woman with SCAD of unknown etiology.

The patient and the hospital consented to publication of the case.

CASE PRESENTATION

This article describes the case of a 52 year-old woman with no risk factors of coronary artery disease, presenting with intense chest pain after extreme physical activity. She reported moving heavy wardrobes for several days prior to the occurrence of symptoms. She was referred to the hospital with clinical manifestation of nonSTEMI with slight hypokinesia of the inferior wall and a normal ejection fraction on echocardiography. Because of persisting chest pain a coronary angiography was performed and a spiral dissection of the right coronary artery with thrombi was

identified. However, TIMI III flow (Figure 1A and 1B) identified no atherosclerotic lesions in the left coronary artery.

Conservative therapy was initiated with heparin, intracoronary administration of IIB/IIIa glycoprotein inhibitors and continued with intravenous infusion, clopidogrel and acetylsalicylic acid.

One week later there were no thrombi visualized in the coronary artery, however persisting dissection of the coronary artery was indicated by both coronary angiography (Figure 2) and optical coherence tomography (OCT) (Figure 3A, 3B and 3C). OCT showed multiple dissections in the affected artery. The patient was clinically stable during the week after admission, when she received medical treatment.

It was decided to perform delayed PCI with multiple drug eluting stents (DES) inserted during the patient's current hospitalization. Three Biolimus A9™ DES were

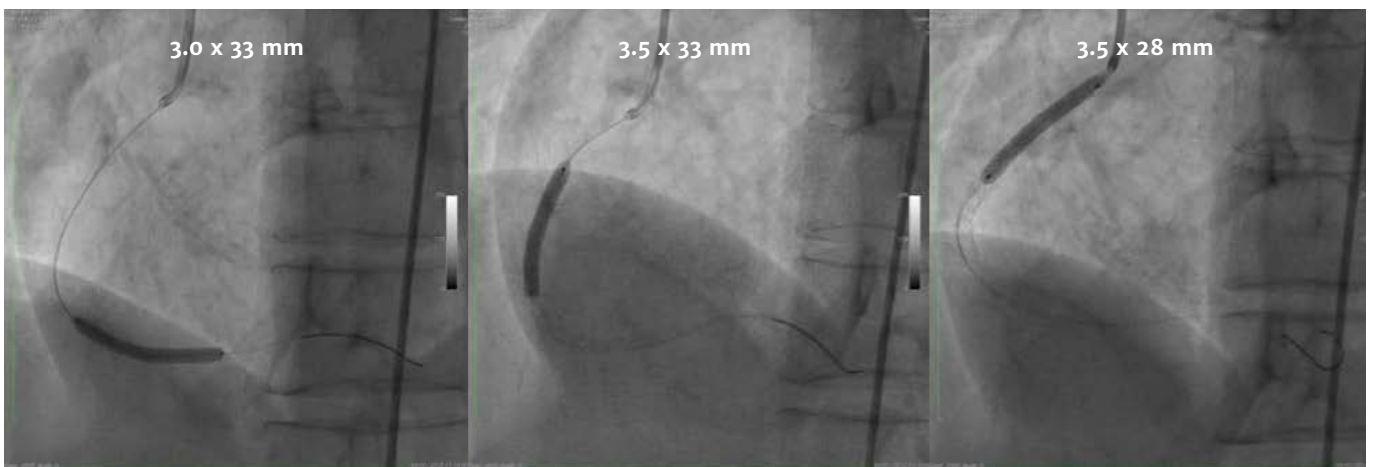


FIGURE 4. Three Biolimus A9™ DES were implanted (3.0 x 33 mm, 3.5 x 33 mm and 3.5 x 28 mm) from the distal part of the vessel to the proximal part

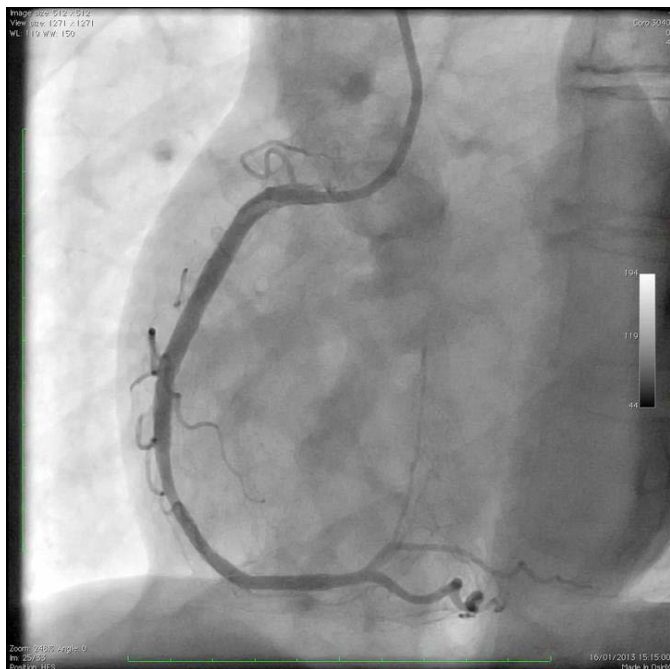


FIGURE 5. Final angiograph showing optimal results

implanted (3.0×33 mm, 3.5×33 mm and 3.5×28 mm) from the distal part of the vessel to the proximal part (Figure 4), with the final angiograph showing optimal results (Figure 5). Medical treatment during follow-up consisted of clopidogrel 75 mg daily, to be taken for the following twelve months, as well as acetylsalicylic acid 100 mg daily,



FIGURE 7. No in-stent restenosis at 12 months follow-up

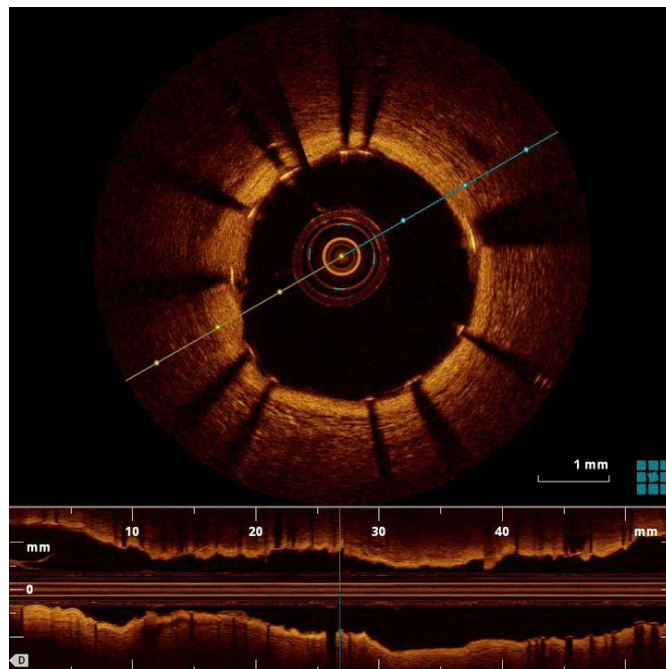


FIGURE 6. Final result after stent implantation checked by OCT

beta blockers and statins. The final result after stent implantation was checked by OCT (Figure 6).

At the twelve months post-operative clinical check-up, angiographic and OCT procedures indicated the patient was free of any symptoms. Coronary angiography showed persisting optimal results with no in-stent restenosis

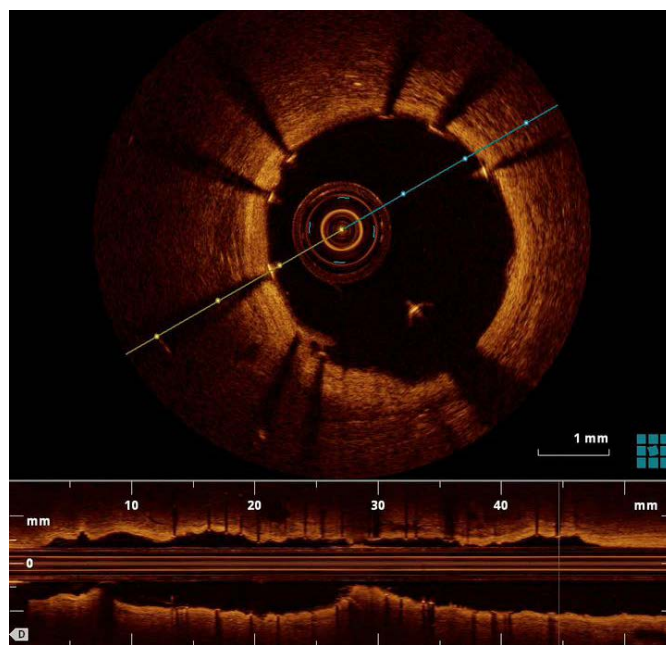


FIGURE 8. Optical coherence tomography showing stent struts epithelization at 12 months

(Figure 7), and optical coherence tomography showed optimal stent struts epithelization (Figure 8). Further medication was limited to acetylsalicylic acid.

At the two year's clinical follow-up visit, the patient was stable, without any complaints with neither chest pain nor dyspnea on exercise.

DISCUSSIONS AND CONCLUSIONS

Spontaneous coronary artery dissection (SCAD) is a rare disease, occurring most often in young women, around 40 years of age who have no risk factors of coronary artery disease (CAD). Risk factors are status peripartum, postpartum or after extreme physical stress. Typically clinical manifestation of the disease is an acute coronary syndrome, with 50% of patients having a ST elevation myocardial infarction (STEMI).⁵

Because of the low number of documented cases, there are unclear recommendations concerning the therapy of this rare disease.

As reported in the case described above, conservative therapy is recommended initially, followed by, if indicated, delayed PCI. Ideally this procedure should be OCT guided to avoid the complication of introducing the wire into a false lumen, and to check the result on completion of the procedure. For the stenting procedure, the use of biodegradable vascular scaffolds (BVS) could represent the ideal option in the treatment of dissected coronary arteries unaffected by atherosclerosis.

CONFLICT OF INTEREST

None declared.

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