Rev Port Cardiol. 2017;36(1):59.e1–59.e5

Revista Portuguesa de Cardiologia
Portuguese Journal of Cardiology
www.revportcardiol.org

CASE REPORT

Spontaneous coronary artery dissection: Still a lot to learn

David Neves*, **Ângela Bento**, **Renato Fernandes**, **Lino Patrício**, **José Aguiar**

Serviço de Cardiologia, Hospital Espírito Santo, Évora, Portugal

Received 6 November 2015; accepted 4 June 2016
Available online 14 December 2016

KEYWORDS
Spontaneous coronary artery dissection;
Optical coherence tomography;
Percutaneous coronary intervention

Abstract Non-atherosclerotic spontaneous coronary artery dissection (SCAD) is an uncommon but probably underdetected pathological substrate for acute coronary syndrome. Clinical associations have been noted, like female gender and young age, but its pathophysiology is not yet fully understood. In this report we describe the case of a 50-year-old woman, without cardiovascular risk factors presenting with non-ST segment elevation myocardial infarction, in whom SCAD was diagnosed. Treatment was initially conservative but due to aggravation of the dissection she eventually underwent a complex percutaneous coronary intervention, requiring implantation of multiple stents, but with a good clinical outcome. The procedure was guided by optical coherence tomography (OCT). Carefully analyzing the combined pictures of OCT and angiography, the dissection appeared to be filled with a clear fluid, but not contrast.

PALAVRAS-CHAVE
Disseção coronária espontânea;
Tomografia de coerência óptica;
Angioplastia coronária

Disseção coronária espontânea – ainda muito por aprender

Resumo A disseção espontânea de artéria coronária (DEAC) é uma causa pouco frequente, mas provavelmente sub-diagnosticada, de síndrome coronária aguda. Estão descritas algumas associações clínicas, como o sexo feminino e a idade jovem, mas ainda não está estabelecida a completa fisiopatologia desta entidade. Neste trabalho apresentamos o caso de uma mulher de 50 anos, sem fatores de risco conhecidos, que se apresenta com um enfarte agudo do miocárdio sem supra-desnivelamento de ST, e em quem é diagnosticada uma DEAC. O tratamento foi inicialmente conservador, no entanto, devido a agravamento da disseção, acabou por realizar uma angioplastia complexa, requerendo implantação de vários *stents*, com bom resultado clínico. O procedimento foi guiado com tomografia de coerência óptica (OCT). Na análise cuidada das imagens de OCT e angiografia, constata-se que a disseção aparenta estar preenchida com um fluido translúcido, mas não contraste.

* Corresponding author.
E-mail address: dcneves25@hotmail.com (D. Neves).

http://dx.doi.org/10.1016/j.repc.2016.06.012

Introduction

Spontaneous coronary artery dissection (SCAD) has long been known to the scientific community – at least since the first case description in 1931.[1] It is thought to be relatively rare – about 3% of acute coronary syndromes (ACS)[2] – but important, since it can have significant consequences such as ischemia, ACS, malignant arrhythmias and sudden cardiac death.[3] It may also present with mild and/or atypical symptoms or even be asymptomatic, and can therefore be under-diagnosed. It can also lead to transient wall motion abnormalities and be misdiagnosed as Takotsubo cardiomyopathy.[4]

The pathophysiology of this entity is not completely understood. Mechanistically, it has been proposed that an intramural hematoma forms due to one of two mechanisms: an intimal tear or intramural hemorrhage from the vasa vasorum.[5] There is often an underlying arteriopathy and a precipitating stressful event, like intense exercise. The arteriopathy may be due to atherosclerosis, peripartum state, connective tissue disorders, systemic inflammatory conditions, coronary artery spasm or other conditions.[6] It has also been associated with fibromuscular dysplasia in non-coronary arteries.[7] Intravascular imaging has a crucial role in the study and management of this condition, especially optical coherence tomography (OCT), due to its very high spatial resolution.[8–10]

After diagnosis, long-term prognosis is usually benign.[11] We report on a clinically challenging case in which a spontaneous dissection was diagnosed.

Case report

We report the case of a 50-year-old woman with no known cardiovascular risk factors and a history of thyroid disease and anemia during adolescence that eventually resolved without a specific diagnosis. She was diagnosed with probable myocardial infarction with normal coronary arteries three years before this event. At that time she had a coronary angiogram, which revealed no angiographically significant coronary artery disease (Video 1). She also underwent a myocardial perfusion scan, which was normal, and cardiac magnetic resonance imaging (MRI), which showed a localized transmural scar in the medial segment of the anterior wall (Online Figure 1). She was discharged on dual antiplatelet therapy for one year, followed by monotherapy with aspirin, as well as a statin, angiotensin-converting enzyme inhibitor and beta-blocker. In May 2015, just starting menopause, and in the context of severe emotional stress, she presented with severe central chest pain radiating to the back and neck, which resolved in 30 min after taking sublingual nitroglycerin. The next day the pain recurred, with greater intensity, sharper (not clearly oppressive) and radiating to both arms, with no relieving factors. She contacted the emergency services and was transported to hospital.

On admission the pain was decreasing; the physical examination was unremarkable, the electrocardiogram showed sinus rhythm, with negative T waves in the inferior leads, and troponin I was positive. The pain eventually disappeared after intravenous nitrates, and she was admitted

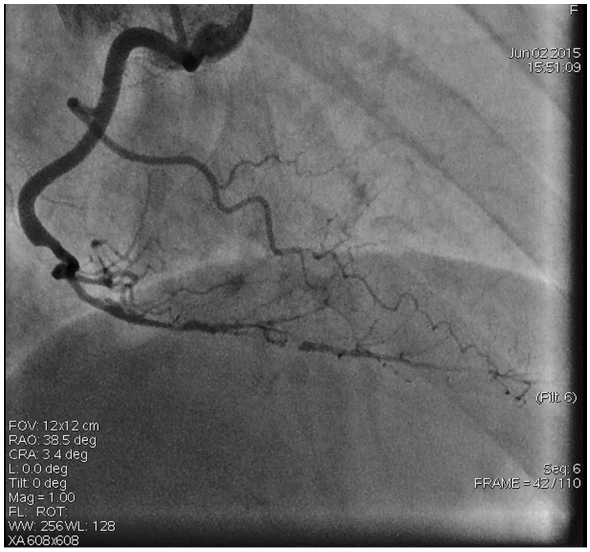

Figure 1 First angiogram of the right coronary artery (RCA), showing a long spontaneous coronary artery dissection from the distal RCA to the distal posterior descending artery and posterolateral branches.

to the coronary care unit. She underwent coronary angiography (Figure 1, Video 2), which revealed a spontaneous dissection of the posterior descending artery, with TIMI 2 flow, some posterolateral branches visualized from intercoronary collaterals, and severe vasospasm of the proximal right coronary artery (RCA), which reproduced the pain, relieved after intracoronary nitrates. No other unequivocal coronary lesions were noted, although a long dissection of the left anterior descending artery with intact intima cannot be excluded (Online Figure 2). It was decided not to perform percutaneous coronary intervention (PCI), and she was kept in the ward anticoagulated with subcutaneous enoxaparin (1 mg/kg twice daily), with dual antiplatelet therapy and a calcium channel blocker. Screening for autoimmune disease was negative. There were no events during hospitalization and she was scheduled for an angiographic review a week later, which showed progression of the dissection, with a wider false lumen (Figure 2, Video 3). Pain recurred during the procedure and a dissection was noted in a posterolateral branch. It was decided to perform PCI, and two bioabsorbable vascular scaffolds (BVS) were implanted in the PDA, guided by optical coherence tomography (OCT) coregistered with angiography. A third BVS was implanted in the distal RCA due to proximal progression of the dissection. A bare-metal stent was also implanted in the ostial RCA due to a traumatic dissection induced by the guiding catheter. Comparison of the images from angiography and OCT reveals a discrepancy in total (false plus true) diameter in the distal RCA (Figure 3, Video 4). After the procedure the patient was asymptomatic, although with a significant residual dissection in the RCA and posterolateral branch (Video 5). Anticoagulation was suspended and she was discharged five days later, with no further episodes of chest pain. Four months after this episode, she has had no recurrence of pain and is asymptomatic.