

Spontaneous dissection of the right coronary artery in a patient with acute coronary syndrome

Dissecção espontânea da artéria coronária direita em paciente com síndrome coronariana aguda

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ABSTRACT

We present a case of acute coronary syndrome with ST-segment elevation (ACS-STEMI) and spontaneous dissection of the right coronary artery, as evidenced by coronary angiography in a male patient, previously submitted to primary angioplasty with a stent implantation 3 years ago.

Keywords

Coronary Artery Disease; Percutaneous Coronary Intervention; Myocardial Infarction; spontaneous dissection coronary artery; stents.

RESUMO

Apresentamos um caso de síndrome coronariana aguda com supra desnivelamento do segmento ST (SCACSST) e dissecção espontânea da artéria coronária direita, evidenciada através da cineangiocoronariografia, em paciente do sexo masculino, previamente submetido à angioplastia primária com implante de stent há 03 anos.

Palavras-chave

Doença da Artéria Coronária; Intervenção Coronária Percutânea; Infarto do Miocárdio; Dissecção espontânea da artéria coronária; stents.

Introduction

Spontaneous coronary artery dissection (SCAD) is a rare entity of acute myocardial ischemia, usually found as reports of isolated cases in the literature^{1,2}. It is an underdiagnosed disease with a variable clinical presentation, which can cause acute coronary syndromes (ACS) and sudden death^{3,4}.

In fact, its etiology is unknown and its real incidence, usually observed in arteries free of atheromatous obstruction to angiography², became more prevalent after the introduction of the invasive approach of ACS⁵. However, it is imperative to point out that the presence of atherosclerosis in the arteries does not exclude SCAD, since endothelial dysfunction seems to be the pathophysiological basis for the onset of dissection².

We have decided to report the following case, due to the peculiarity of its occurrence in a patient already affected by ACS-STEMI, treated with stent implantation at that time, of a new acute coronary event, 03 years after the first one, this time with spontaneous dissection of the artery previously treated.

Case report

Patient, 50 years old, male, hypertensive, diabetic, ex-smoker (2 packets/day for 20 years) and previous history of coronary artery disease, with implantation of non-pharmacological stent, 3 years ago, in the proximal and mid 1/3 of the right coronary artery. He sought medical attention due to precordial pain and feeling of tightness, 24 hours after admission, with a strong intensity with irradiation to the back and worsening in the last 3 hours, associated with vomiting, sweating and palpitations. He had reported progressive angina pain typical of making physical efforts, a few months prior to this, and had been making regular use of bisoprolol, simvastatin and ASA.

The electrocardiogram (ECG) on admission revealed sinus rhythm with isolated ventricular extrasystoles, QS pattern in lower leads, with no signs of acute ischemia. He was taken to the emergency room and medicated with ASA, morphine and isosorbide dinitrate. The first dose of myocardial necrosis markers was normal (troponin 0.007ng / mL, normal <0.014ng / mL).

Ten 10 hours after, the patient again presented chest pain

associated with dynamic alteration of the ECG change, with ST segment elevation in lower leads. Continuous infusion of intravenous nitroglycerin was started and the patient was taken to the Hemodynamics laboratory for urgent angiocoronariography. The examination conducted via the right femoral revealed diffuse proliferative restenosis of the stent that had been implanted three years previously, in the proximal and mid 1/3 of the right coronary artery, as well as there being an image of a spontaneous spiral dissection in the transition from the mid 1/3 to the distal, immediately

after the distal edge of the stent (Figure 1). The other coronary arteries and their respective branches did not present significant obstructive lesions. First of all, we chose percutaneous coronary intervention with pre-dilatation of all segments affected by restenosis, followed by implanting of two zotarolimus-eluting stents (3.5 x 38mm and 3.0 x 24mm) with a small overlap between these prostheses. Control luminography revealed the procedure had a good final result, with no residual lesion, no dissection image and the maintenance of the distal TIMI III flow (Figure 2).

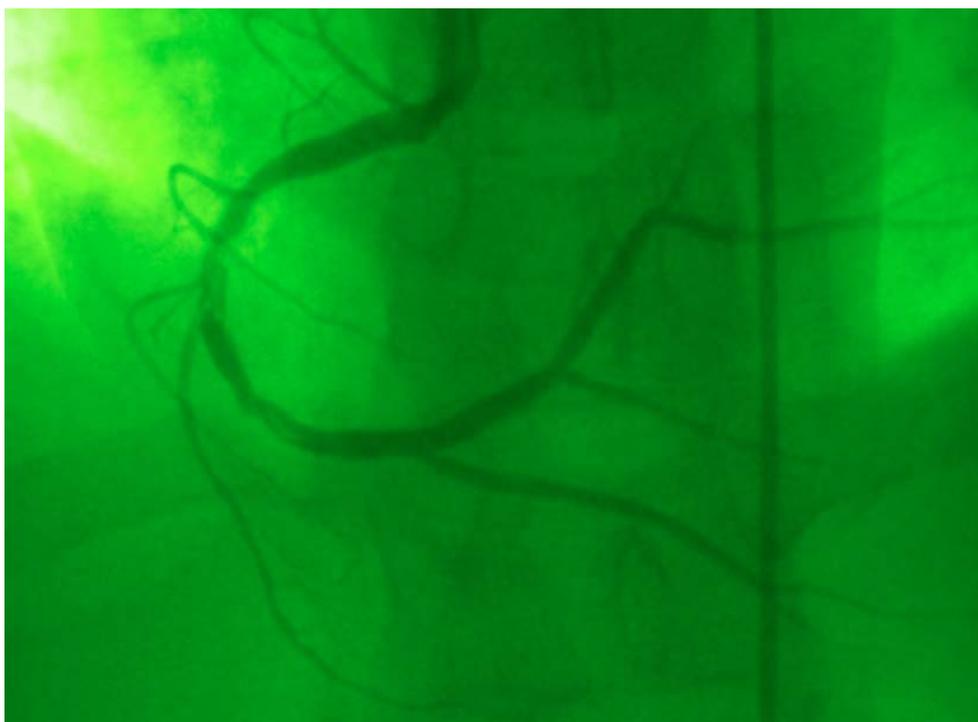


Figure 1. Right Coronary Artery in cranial PA showing line of dissection starting at the level of the stent previously implanted in the 1/3 proximal artery.

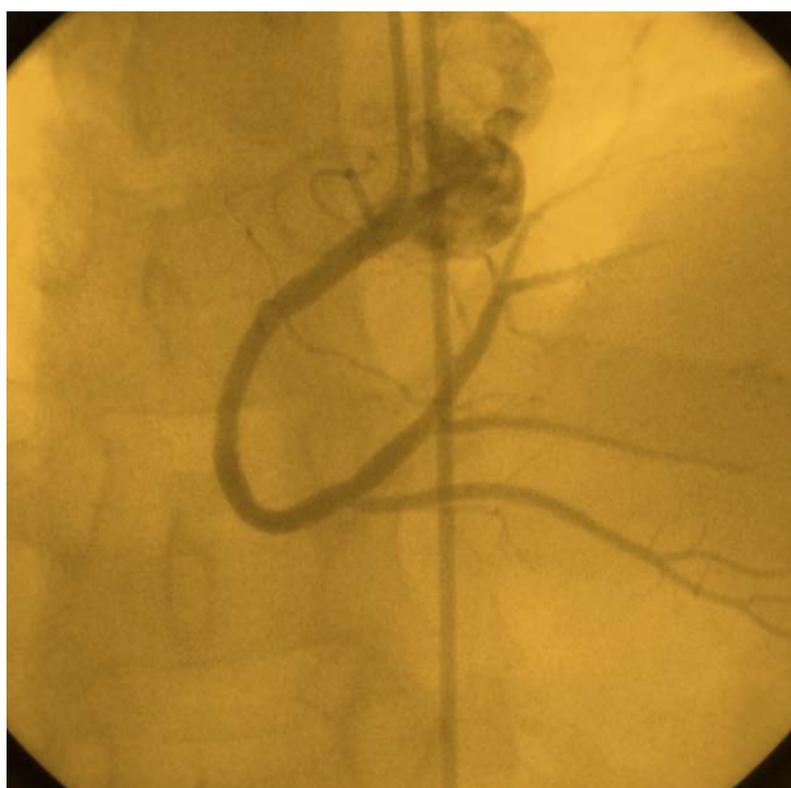


Figure 2. Right Coronary Artery in cranial PA after the implant of Zotolimus-eluting stents in the 1/3 proximal, mid and distal arteries.

The patient progressed satisfactorily, without complications after angioplasty, and was discharged on the fifth postoperative day with the prescription of enalapril, bisoprolol, ASA, clopidogrel and atorvastatin for use at home. Two months later, he returned to the clinic for asymptomatic and clinically stable outpatient counseling for maintenance of the antiplatelet double aggregation for at least 1 year, as from the date of the infarction, in addition to having periodic clinical reassessments.

Comments

Historically, the first report of SCAD was made by Pretty in 1931, after performing a necropsy on a 42-year-old woman who evolved to sudden death after presenting chest pain ⁶ and since then, case reports have been published sporadically.

Spontaneous coronary artery dissection predominantly affects young patients, under 50 years old, female, using contraceptive drugs or around the time of delivery, and without a history of cardiovascular risk factors⁷. However, this nosological entity may also be associated with underlying coronary atherosclerosis, connective tissue diseases, vasculitis, cocaine abuse, thoracic trauma, etc¹. It rarely affects males, and about half of the events occurring in this gender are preceded by intense physical exertion, similar to the case described in this paper. Although the cause is unknown, data from the literature show that its incidence is low, varying from 0.1% among patients with stable anginal symptoms and 4.0% of all cases of acute coronary syndrome⁸.

There seem to be two pathophysiological mechanisms related to the occurrence of SCAD. The first is said to be attributed to increased shear stress in the endothelial wall, and the second, is attributed to hemorrhage in the middle layer which possibly arises from tissue weakening of the arterial wall due to inflammation and/ or the abnormal synthesis of collagen, and this possibly also includes because of rupture of the vasa vasorum⁹. In both cases, there is a reduction in the coronary artery lumen and consequent myocardial ischemia ¹.

All ACS spectra can be described as a clinical presentation of SCAD, and this includes sudden death. Usually, it is a necropsy that diagnoses there has been SCAD since angiographic documentation is limited. However, in some sporadic cases such as this one, it is possible to diagnose SCAD by performing coronary angiography. The few reports of a case of SCAD diagnosed by means of this type of intervention show that the anterior descending coronary artery is the most affected vessel (75%), followed by the right coronary artery (20%), the circumflex artery and its branches (4%), and very occasionally, the left main coronary artery (<1%)⁸.

The therapeutic options for SCAD involve from clinical treatment to myocardial revascularization surgery or stent implantation. When possible, some criteria, such as the patient's degree of clinical severity, hemodynamic status and topography of the dissection, should be considered when establishing a treatment¹⁰.

Although percutaneous coronary intervention for SCAD is associated with a high rate of technical failures, in the case described in particular, because it is a ACS-STEMI, with the peculiarity of the restenosis of the stent which was implanted 3 years ago and alteration of the distal flow through the coronary artery, the option to perform percutaneous intervention promptly was made, with the implantation of Zotarolimus-eluting stents, which took place without interurrences and with immediate success.

We report a rare and successful case of spontaneous dissection of the right coronary artery, diagnosed by coronary angiography, in a male patient. In fact, other imaging techniques, such as intracoronary ultrasonography and optical coherence tomography, when available, coupled with early coronary angiography in ACS, are a great help when taking a therapeutic and prognostic decision on SCAD¹¹.

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