
Images in cardiovascular medicine

Natural evolution of spontaneous multiple coronary dissections causing acute myocardial infarction

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A 36-year-old male patient was admitted to our coronary care unit because of clinical and ECG signs of acute lateral myocardial infarction. He was a heavy smoker (20-30 cigarettes per day) with no other coronary heart disease risk factors and no history of previous cardiovascular disease. The patient underwent systemic thrombolysis with rapid resolution of the chest pain and complete normalization of ST-segment elevation in D1-aVL leads. The cardiac indices of necrosis peaked at the sixth hour (creatin kinase-MB mass 97 $\mu\text{g/l}$, troponin I 53 $\mu\text{g/l}$). No major complications were observed during the following period of hospitalization. On day 7, the patient underwent coronary angiography, which demonstrated a grade D dissection of the main diagonal branch of the left anterior descending artery (LAD). The lesion involved the proximal and medial segments of the vessel, with the dissection emanating just after the origin of the artery and extending a few millimeters backward and 4-5 cm forward as a spiral luminal filling defect reaching the distal tract of the vessel (Fig. 1). Similar lesions, although focal (grade A dissections), were observed in the distal segments of the right coronary artery and LAD. Because of a negative exercise stress test and evidence of a good ventricular function, no revascularization treatments were planned and the patient was discharged on aspirin, β -blockers and nitrates. Six months later, a new coronary angiography was performed to control the evolution of the coronary lesions. A remarkable resolution of the lesions in all the diseased vessels was shown. In particular,

the flail of the vessel wall in the LAD main diagonal branch appeared completely and spontaneously sealed with full recanalization of the artery (Fig. 2).

Spontaneous coronary artery dissection is a rare cause of acute myocardial infarction. The incidence of this disease, however, is underestimated, because it is responsible for sudden death or fatal myocardial infarction in more than 50% of cases. Spontaneous coronary artery dissection occurs more frequently in women during the *peripartum* period or on oral contraceptive therapy and in young healthy male heavy smokers. Although the short-term outcome may vary, the long-term prognosis is good¹. In the past years, several papers have been published, reporting both invasive and non-invasive strategies for the acute treatment of spontaneous coronary artery dissection. In many cases, a favorable outcome both with medical therapy, with² or without thrombolysis^{3,4}, and with balloon angioplasty^{5,6} or coronary artery bypass graft⁷ has been described. The case reported herein, along with other published previously^{8,9}, confirms the efficacy of thrombolysis in the treatment of myocardial infarction secondary to spontaneous coronary artery dissection, suggesting the high thrombogenicity of these lesions. In contrast, others have reported a rapid deterioration of the clinical conditions in patients with spontaneous coronary artery dissection treated with thrombolysis¹⁰. This is probably due to the extension of the dissection after the thrombolytic therapy¹¹. Therefore, no definitive proof of a better outcome with conservative therapy compared to invasive

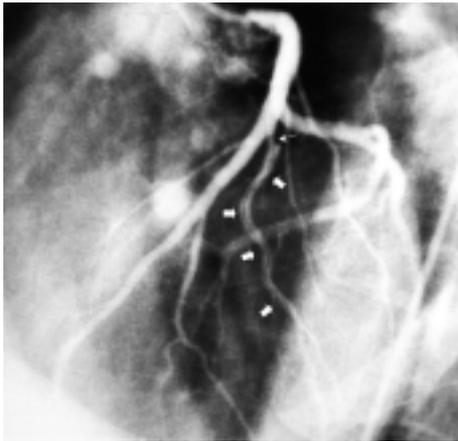


Figure 1. Left anterior oblique coronary arteriogram of the patient performed 7 days after myocardial infarction. It shows a spiral luminal filling defect of the main diagonal branch of the left anterior descending artery starting a few millimeters from the origin of the vessel (thin arrow) and extending for 4-5 cm to the medial and distal segments of the vessel (thick arrows).

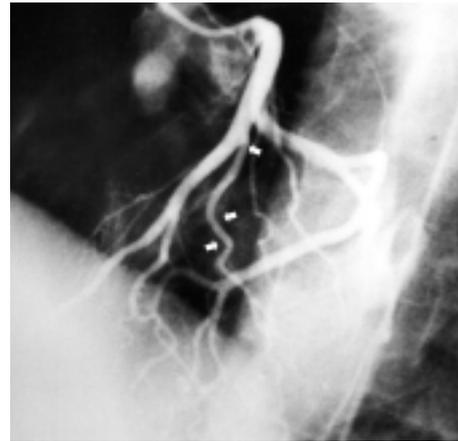


Figure 2. Left anterior oblique coronary arteriogram performed in the same patient 6 months after myocardial infarction. The main diagonal branch of the left anterior descending artery appeared completely re-open (arrows) and no image of flail is evident.

strategies can be established, because no comparative studies have been performed. The optimal management of spontaneous coronary artery dissection probably depends upon the presence of intimal versus extramural damage and should be tailored to the requirements of the individual patient¹².

Acknowledgments

This work is dedicated to the memory of our friend and colleague Dr. Patrizio Zampieri.

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