Case report - Coronary

Spontaneous left main coronary artery dissection

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Abstract

Spontaneous coronary artery dissection is a rare and generally fatal disease. A review of the literature demonstrates that the aetiopathogenesis of the disease is unknown and that the histology is rarely described. It usually occurs in young women during the postpartum period or while taking oral contraceptives. The treatment depends on the clinical presentation and the results of the angiography. We report here a case of spontaneous dissection of the left main stem coronary artery, with extension into the left coronary territory which occurred in a 43-year-old woman.

Keywords: Coronary dissection; Estro-progestinic therapy; Surgical revascularization

1. Introduction

Primary spontaneous coronary artery dissection is an uncommon cause of acute myocardial infarction. Its aetiology and pathogenesis have not been fully elucidated. The prognosis and treatment of this illness has not yet been fully defined.

It occurs often in young females and it usually involves a single coronary artery. The initial presentation is most likely unstable angina pectoris and must be taken into consideration in patients without cardiovascular risk factors. The causes of the dissection remain unknown and the prognosis is very poor with a high risk of death due to myocardial infarction and the absence of defined guidelines for management of this kind of patient [1].

We describe a case of spontaneous coronary artery dissection in a young woman who was successfully treated by surgical revascularization.

2. Case report

A 43-year-old woman was admitted in a peripheral hospital with prolonged chest pain. She had no history of previous cardiovascular disease, no collagen tissue disease and no risk factors for coronary artery disease. Physical examination was normal. Notably, the patient had been on oral contraceptives with Ethinylestradiol and Gestoden, for the past five years, and the previous month she had a blunt chest trauma from a car accident.

Electrocardiogram (ECG) demonstrated a 3-mm anterior ST-segment elevation in leads V3 to V6, T-wave inversion in leads V2 to V6 and a very high level of troponin I. On the basis of these, a diagnosis of anterior Q-wave myocardial infarction was made.

A thrombolytic treatment was started immediately with Tenecteplase, a tissue plasminogen activator (tPA), with regression of angina and almost normalization of the ECG alterations.

On the eighth day after acute myocardial infarction (AMI), the patient was transferred to another institution where a coronary angiography was made. The study revealed a dissection of the left main stem, with a spiral extension along the left anterior descending coronary artery (LAD). There was a delayed filling of the artery and an intense residual staining in the LAD (Fig. 1).

It was described as a critical distal left main stem tapering, severe diffuse damage of the LAD, of the second diagonal and of the left circumflex (LCx) with a normal right coronary artery.

The patient was transferred to our Department on the same day, in stable hemodynamic conditions and without rest angina.

Echocardiography showed dyskinesia of the left ventricular anterior wall, of the apex and a moderate ejection fraction reduction (37%). Dobutamine echo stress detected viable myocardium on the apex.

Treatment with Tirofiban and Heparin was administered for four days consecutively, for the speculated presence of intravascular thrombus.

The patient was proposed for surgery but delayed for seven more days because of the recent thrombolysis, the antiaggregant treatment and the lack of any residual chest pain.

On the 15th day after AMI the patient underwent a surgical procedure for myocardial revascularization. On the anterior
aspect of the left ventricle, along the LAD, a hematoma was present.

On extracorporeal circulation (ECC) a saphenous vein graft was anastomosed to the most distal part of the LAD and the left internal mammary artery (LIMA) was anastomosed to the first obtuse marginal branch. The choice not to graft the LAD with the LIMA was taken because damage already had occurred in that territory while the obtuse marginal territory was jeopardized by the dissection, but there were no signs of necrosis. The recovery was uneventful and the patient was discharged on the 7th postoperative day.

3. Discussion

Spontaneous dissection of coronary arteries is rare. The majority of cases (70–75%) [2, 3] are diagnosed post mortem, as the immediate mortality is 50% with a 20% mortality over the hours following the acute event [4].

The etiologies are poorly defined, but may include hypertension, Marfan syndrome, connective tissue disease or immune system disease [5]. Sometimes, a recent chest trauma is related. More frequently this event is observed in women, particularly during the post partum period or in women on oral contraception [6, 7], in whom it is responsible for one-third of all myocardial infarctions. So probably, the increased water retention, typical of pregnancy and estro-progestinic contraception, seems to play an important role in the development of this pathology.

Coronary artery dissection generally results in sudden death, but some patients may show features of coronary insufficiency, allowing the diagnosis to be done.

The treatment of spontaneous dissection must be defined on a single case basis, considering the clinical and anatomical features.

Medical treatment can be considered in asymptomatic patients [7].

Angioplasty with placement of an intracoronary stent can give good results, but is associated with a risk of progression of the dissection or the formation of intramural hematoma. Classical surgical myocardial revascularization under cardiopulmonary bypass has been reported in the literature to achieve good results [8–10] and is recommended as first-line treatment, especially when several coronary vessels are involved.

In this particular case, the choice to use the LIMA to bypass the obtuse marginal was due to the fact that after 15 days from the acute onset of the dissection and with a well established necrosis of the anterior aspect of the left ventricle, less myocardium was left with poor flow in the territory of LAD than in the territory of the circumflex artery.

Treatment modality is dictated by the clinical scenario. Factors which would favor a more aggressive treatment strategy include evidence of ongoing ischemia, left main or proximal left anterior descending coronary artery involvement. In many situations, if these features are not present, a conservative treatment strategy is favored, and complete healing may be observed on follow-up angiography. In our case, if we have a precise diagnosis at the beginning of the symptoms’ onset, we would probably not use fibrinolitic or platelet inhibitors and would probably treat her surgically, after insertion of an IABP (intraaortic balloon pump) to have more stable hemodynamic conditions.

Further studies are needed to evaluate conclusive histological features of spontaneous coronary artery dissection, but the association of estro-progestinic therapy and a blunt chest trauma seems to be related with the dissection of the coronary arteries.

References