Case Report

Fatal postpartal dissection of all coronary arteries in an in vitro-fertilized woman

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Summary Myocardial infarction complicates approximately 1 in 10,000 pregnancies [1]. Coronary artery dissection is the leading cause of pregnancy-related myocardial infarction during the postpartum period. Proposed etiologies include altered endocrine status, hemodynamic stress, eosinophilic inflammatory infiltrate, and disruption of vasa vasorum. Definitive diagnosis is made by coronary angiography. Treatment has not been well defined. Strategies include medical management, stenting, and coronary artery bypass grafting. Here, we report the postpartal dissection of all 3 coronary arteries and of the left main coronary artery in an in vitro-fertilized, 40-year-old woman who, after giving birth to a newborn by cesarean section, presented with myocardial infarction and required urgent coronary artery bypass surgery. Spontaneous coronary dissection that predominantly affects young women is rare and is often dramatic. One-third of the cases occur during pregnancy or in the postpartum period. Our case report is unique; postpartum coronary artery dissection in a patient of any age that was fertilized in vitro is very rare.

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Introduction

Myocardial infarction complicates approximately 1 in 10,000 pregnancies [1]. Coronary artery dissection is the leading cause of pregnancy-related myocardial infarction during the postpartum period. Proposed etiologies include altered endocrine status, hemodynamic stress, eosinophilic inflammatory infiltrate, and disruption of vasa vasorum. Definitive diagnosis is made by coronary angiography. Treatment has not been well defined. Strategies include medical management, stenting, and coronary artery bypass grafting. Here, we report the postpartal dissection of all 3 coronary arteries and of the left main coronary artery in an in vitro-fertilized, 40-year-old woman who, after giving birth to a newborn by cesarean section, presented with myocardial infarction and required urgent coronary artery bypass surgery. Spontaneous coronary dissection that predominantly affects young women is rare and is often dramatic. One-third of the cases occur during pregnancy or in the postpartum period. Our case report is unique;
postpartum coronary artery dissection in a patient of any age that was fertilized in vitro is very rare.

Case report

A 40-year-old woman (gravida 2, para 1) conceived after a third tentative in vitro fertilization and gave birth to a newborn via cesarean section in her 36th week of pregnancy. Her pregnancy was uncomplicated. There was nothing unusual in her medical history, and no cardiovascular risk factors were identified. The delivery was uneventful. Forty-four days after postpartum, the patient was admitted to the emergency department with a diagnosis of acute anterior myocardial infarction. After admission, within 4 h following the onset of chest pain, clinical examination was normal. Electrocardiogram showed sinus rhythm with QS pattern and revealed ST-segment elevation through leads V1 to V4 and in DII, DIII, AVL. Immediate coronary angiography revealed dissections of 2 coronary arteries. The right coronary artery (RCA) was affected in its proximal portion (Fig. 1). A dissection line that extended from the proximal portion of the left descending anterior coronary was seen, the lumen of the entire left anterior descending coronary artery (LAD) was narrowed. The circumflex artery was not involved. The angiographic appearance of the other coronary segments was smooth, suggesting the absence of atherosclerotic coronary disease.

On the basis of the preserved coronary flow in all segments, the absence of symptoms and hemodynamic stability at the time of cardiac catheterization, the patient was treated conservatively. In addition to β-blockers and nitrates, she was given combined antithrombotic therapy of aspirin, clopidogrel, platelet glycoprotein IIb/IIIa receptor antagonist (tirofiban), and full-dose fractionated heparin. Despite aggressive medical treatment, the patient experienced recurrent chest pain one day after the catheterization. The electrocardiogram showed rising of ST segment elevation and extension to leads V3, V6, D1, and AVL (Fig. 2).

Repeat coronary angiography revealed a severe progression of the dissections in the left coronary circulation, now causing total occlusion of the middle LAD, dissection of the shaft and the distal left main coronary artery. The circumflex artery was now concerned by the dissection (Fig. 3).

Echocardiography showed left ventricular systolic dysfunction with depressed ejection fraction at 35% and anteroseptal apical akinesia. An important acute ischemic mitral regurgitation was also diagnosed (Fig. 4).

After the placement of an intra-aortic balloon pump to improve coronary perfusion, the patient immediately underwent coronary artery bypass and mitral valve replacement surgery. Her postoperative course was unfortunately bad: 12 h after the CABG she developed a hemodynamic failure probably by an extension of the coronary dissection and rapidly she developed an electro mechanical dissociation causing death.
Fatal postpartum dissection of all coronary arteries in an in vitro-fertilized woman

Autopsy reports, in this patient population, have described coronary artery spasm in most cases, with pregnancy-related myocardial infarction followed by atherosclerotic heart disease and coronary dissection [4].

Eighty percent of all spontaneous coronary artery dissections occur in women.

Older age and multiparty seem to be risk factors. Many investigators have examined the correlation between peripartum spontaneous coronary artery dissection and estrogen levels; however, case studies have shown conflicting results regarding estrogen levels as the putative causative factor.

The optimal management approach for spontaneous coronary artery dissection has not yet been defined. In the presence of ongoing myocardial ischemia, the recommendations are to administer aspirin, unfractionated heparin, β-blockers, and nitroglycerin [5], and to perform immediate coronary angiography.

The choice of a percutaneous or surgical approach depends on the severity of the coronary involvement, impairment of left ventricular function, and associated comorbidities.

The high mortality rate that accompanies bypass surgery is due in part to the complexity of the operation and the extreme fragility of the coronary artery in pregnant women.

To our knowledge, ischemic mitral regurgitation, which complicates the situation more and more, was not ever reported in those situations and thus makes the surgery more challenging.

References


