Acute Anterior Wall Myocardial Infarction during Pregnancy in a 36-Year Old Patient

Jeroen HM van den Broek, Leo Veenstra, Jan CA Hoornanje* and Timo Lenderink

Department of cardiology, Atrium MC, Heerlen, Netherlands

Abstract

Acute myocardial infarction during pregnancy is a rare clinical condition. We present a case of a 36-year old woman in her 36th week of pregnancy with an acute anterior ST-elevated myocardial infarction (STEMI) caused by an occlusive proximal LAD. First treatment was thrombosuction, followed by placement of a bioresolvable vascular scaffold. Because of post procedural fetal bradycardia an emergency cesarean section was performed on the same day, despite all antithrombotic medications.

Keywords: Myocardial infarction; STEMI; Pregnancy

Introduction

Acute myocardial infarction during pregnancy is a rare condition, estimated to occur in 28 to 62 per 100,000 deliveries with the majority (72%) of patients aged over 30 years [1,2]. Although different pathophysiological processes can lead to myocardial infarction, coronary artery atherosclerotic disease is most common, also during pregnancy [1].

Myocardial infarction, especially extended anterior infarction can lead to hemodynamic instability and in this case is a threat to both maternal and fetal life, which reemphasizes the need for urgent intervention. The potential of biodegradation and restoration of endothelial and vascular function makes the recently introduced bioresolvable vascular Scaffold (BVS) a promising treatment option, especially in young people. Research shows a similar rate of adverse cardiac events [3]. Though BVS seems to be suitable in the case of acute ST-segment elevation myocardial infarction (STEMI) [4], the use of a BVS in STEMI during pregnancy has not yet been reported.

Case Report

A 36-year old woman – with no previous cardiovascular disease – was admitted to the labor ward in her 36th week of gestation. Presentation symptoms were chest discomfort radiating to the left arm, dyspnea, and nausea and vomiting, existing for several hours. Cardiovascular risk factors included smoking and a family history of cardiovascular disease. Physical examination revealed no obvious cardiac abnormalities; blood pressure was 120/85 with a heart rate of 75.

A 12-lead ECG showed extensive anterior ST-elevation myocardial infarction (Figure 1; upper panel). Bedside cardiac ultrasound showed wall motion abnormalities of a large part of the anterior, apical and septal wall. Aspirin 300 mg and ticagrelor 180 mg were administered orally and i.v. heparin (7000 IU). Emergency coronary angiography was performed and a proximally occluded LAD coronary artery was found (Figure 2; left panel), the other coronary arteries showed no abnormalities. Differential diagnosis includes thrombosis or spontaneous coronary artery dissection (SCAD). Percutaneous coronary intervention (PCI) was performed with thrombosuction and placement of a BVS (Figure 2; right panel). Because of distal thrombosis of the vessel, tirofiban was administered i.c. Serum markers were highly elevated, left ventricular ejection fraction, estimated with ultrasound was 35%. Post procedural electrocardiography showed ST-resolution with intraventricular conduction delay and QR pattern on the anterior wall leads (Figure 1; lower panel). During the procedure the patient developed hypotension, after which the fetus showed a repetitive bradycardia on CTG-monitoring.

After the intervention, blood pressure stabilized at 100/60 mmHg, a total of 2000 ml of plasma expander and sodium chloride were given. Four hours post-PCI, the fetus showed another bradycardia lasting for five minutes, after which was decided to perform a cesarean section, despite all the antithrombotic drugs administered. Section was successful but complicated by severe postoperative hematoma of the abdominal wound and anemia. Later the patient showed signs of acute heart failure (pulmonary edema and low blood pressure), therefore intravenous inotropism was started and furosemide was administered intravenous once to twice daily during four days.

The patient remained on the coronary care unit for 5 consecutive days. Cardiac ultrasound before discharge showed an improved ejection fraction of 45% with wall motion abnormalities anterior, septal and apical and no ventricular thrombi.

Discussion

Acute myocardial infarction in young women, especially during pregnancy is rare. Differential diagnosis should include spontaneous coronary artery dissection, especially during pregnancy [1]. Guidelines are clear about the preferred treatment, emergency revascularization with primary PCI including all related antithrombotic medications.

Because it is such a rare condition, there are no data about the safety of administering high doses of antithrombotic drugs during pregnancy. Especially when delivery is expected on short term or when a cesarean section might be considered, antithrombotic treatment might lead to increased blood loss. Opposed to the cases reported by Wassing et al. [5] treated with thrombolysis, percutaneous intervention offers a better option with less bleeding risk and adjustable platelet aggregation inhibition with tirofiban.

*Corresponding author: Jan CA Hoornanje, Department of cardiology, Atrium MC, Heerlen, Netherlands, Tel: +31651955173; E-mail: j.hoorntje@atriummc.nl

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Figure 1: Electrocardiography before (upper panel) and after PCI (lower panel).
Depending on the type of stent that is placed, prolonged antithrombotic therapy with ticagrelor might be indicated. Placement of a bare metal stent (BMS) does not require additional antithrombotic treatment after the acute phase, but might not be the desirable solution in young, otherwise healthy women because of the increased risk of instant restenosis [6-8]. In this case, considering the age of the patient, a BVS was placed, which requires prolonged antithrombotic therapy with ticagrelor.

There was need for emergency cesarean section only 4 hours after PCI procedure, which was performed successfully. The full antithrombotic treatment unfortunately led to a severe, but not life-threatening wound hematoma.

Post procedural hemodynamic instability, which is common in anterior wall infarction, caused fetal distress and in this case the decision to perform an emergency cesarean section. Fluid suppletion in response to post procedural hypotension has led to pulmonary edema and the need for treatment with diuretics. Possibly earlier administration of intravenous inotropes could have prevented this.

In conclusion, acute myocardial infarction during pregnancy is a rare but severe clinical entity which poses both maternal and fetal life at risk. PCI with placement of the recently introduced BVS was successful but consecutive cesarean section was complicated by severe but not life-threatening wound hematoma. Although complicated, both mother and daughter did well during follow up.

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Conflict of Interest

There are no conflicts of interest.

References