



Kasuistika | Case report

Acute myocardial infarction due to coronary dissection in early postpartum

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SOUHRN

Spontánní disekce koronární tepny je vzácnou, nicméně spolehlivě doloženou příčinou ischemie myokardu. Ve většině případů jde o mladé ženy s několika kardiovaskulárními rizikovými faktory. Spontánní disekce koronární tepny typicky vyvolává rozsáhlý infarkt myokardu a představuje významný problém pro diagnostiku a léčbu. Spontánní disekce koronární tepny je nejčastější příčinou ischemie myokardu v období před porodem a po něm u žen v reprodukčním věku.

Tato kasuistika popisuje případ akutního infarktu myokardu přední stěny u kojící ženy, 13 dní po porodu. Předpokládanou příčinou byla disekce ramus interventricularis anterior snižující průtok krve touto koronární tepnou v období před porodem. Stručně popisujeme epidemiologii, patofyziologii, rizikové faktory, diagnostiku, léčbu a prognózu infarktu myokardu v období těhotenství a po porodu.

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ABSTRACT

Spontaneous coronary artery dissection (SCAD) is a rare but well known cause of myocardial ischemia. The majority of the victims are young who have a few cardiac risk factors. SCAD typically causes large myocardial infarction and presents significant challenges to diagnosis and management. SCAD is the most common cause of myocardial ischemia during peripartum and postpartum period in woman of childbearing age.

We present a case of acute anterior myocardial infarction (MI) in a breastfeeding woman, 13 days after delivery. The presumed cause was flow limiting left anterior descending (LAD) artery dissection, in the particular context of peripartum. We discuss briefly the epidemiology, pathophysiology, risk factors, diagnosis, treatment and prognosis of myocardial infarction related to pregnancy and postpartum period.

Introduction

Spontaneous coronary artery dissection (SCAD) is a rare but well-known cause of myocardial ischemia. The majority of the victims are young who have a few cardiac risk factors. SCAD typically causes large myocardial infarction and presents significant challenges to diagnosis and management.

We describe a case of a postpartum woman with SCAD causing an acute anterior MI who was treated using drug-eluting stent (DES).

Case report

A 39-year-old woman was admitted to emergency department with sudden onset of chest pain, radiating to her back. Thirteen days ago, she had delivered her second child with cesarean section. She had developed gestational diabetes which was treated with insulin. The postpartum period had been eventless and the patient was discharged after 2 days. Apart from gestational diabetes, her medical history was unremarkable. She had a history of 20

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packs-years of smoking and had quit just before pregnancy. There were no other known cardiovascular risk factors.

On admission, she was clinically stable with a pulse of 75 beats per minute and a blood pressure of 180/90 mmHg. BMI was 25,5 kg/m². The ECG showed marked ST segment elevation in the anterior leads suggesting an acute anterior MI (Fig. 1). The patient was given aspirin, sublingual nitrate. Echocardiographic examination ruled out aortic dissection and revealed hypokinesia at the apex, mid and apical walls of anterior and lateral walls of left ventricle with an estimated ejection fraction of 40%. She was immediately transferred to the catheter laboratory. The patient was given 600 mg clopidogrel orally and undergone coronary angiography (CAG) immediately.

Coronary angiography showed a flow limiting spiral dissection and thrombus in mid LAD and a non-flow limiting discrete lesion in Circumflex (Cx) artery (Fig. 2). DES was implanted successfully to the lesion within the LAD artery.

Cardiac enzyme levels were elevated. Upon consultation with a pediatrician and discussion with the patient, she stopped breastfeeding and treatment with ACE inhibitor, spironolactone, beta-blocker and statin was started on the second day of presentation. Of note, she was absolutely convinced that these drugs were at most significance for her prognosis and they were dangerous for the baby. She was discharged on 6th day with instructions to take aspirin, statin, beta-blocker, clopidogrel, ACE inhibitor and spironolactone.

Discussion

The myocardial infarction in pregnancy carries high morbidity. The one of most common causes of AMI during pe-

ripartum and postpartum is spontaneous coronary artery dissection (SCAD) which is a rare case in the normal population. Up to one third of SCAD arise in the third trimester of pregnancy or within 3 months postpartum [1]. The majority of SCAD causes a single-vessel disease. Overall, the LAD is affected in 75% of cases, as in our case, the RCA in 20%, the LCx in about 4% and the left main coronary artery in less than 1% [2]. The incidence of SCAD for the general population with AMI is estimated to be less than 1% [3]. The marked hemodynamic changes during and after delivery add strain on the coronary vessel wall, already weakened by progesterone and estrogen. The alterations in the coagulation and fibrinolysis system resulted in a prothrombotic state. The vulnerability to coronary artery dissection during pregnancy may also relate to the presence of hypertension and also to the changes in elastin and collagen synthesis incurred by the hormonal changes of pregnancy. The most common site of involvement of SCAD is LAD artery [4].

Coronary artery disease is uncommon in women of childbearing age but pregnancy increases the risk by 4, with an incidence of 3 to 10 per 100,000 deliveries [5]. The incidence appears to increase, but whether this reflects better diagnosis or a real increase remains unclear. Age is an important risk and women over 35 have a 5 times higher risk. Cigarette smoking during pregnancy increases the risk of MI. Other risk factors include diabetes mellitus, hypertension, preeclampsia, postpartum infection and thrombophilia.

Coronary emboli may be the other etiology of MI in this patient population, presumably related to the clotting diathesis that occurs during pregnancy. Other non-atherosclerotic causes should also be suspected in this patient population, such as ascending aortic dissection, coronary artery spasm, paradoxical emboli.

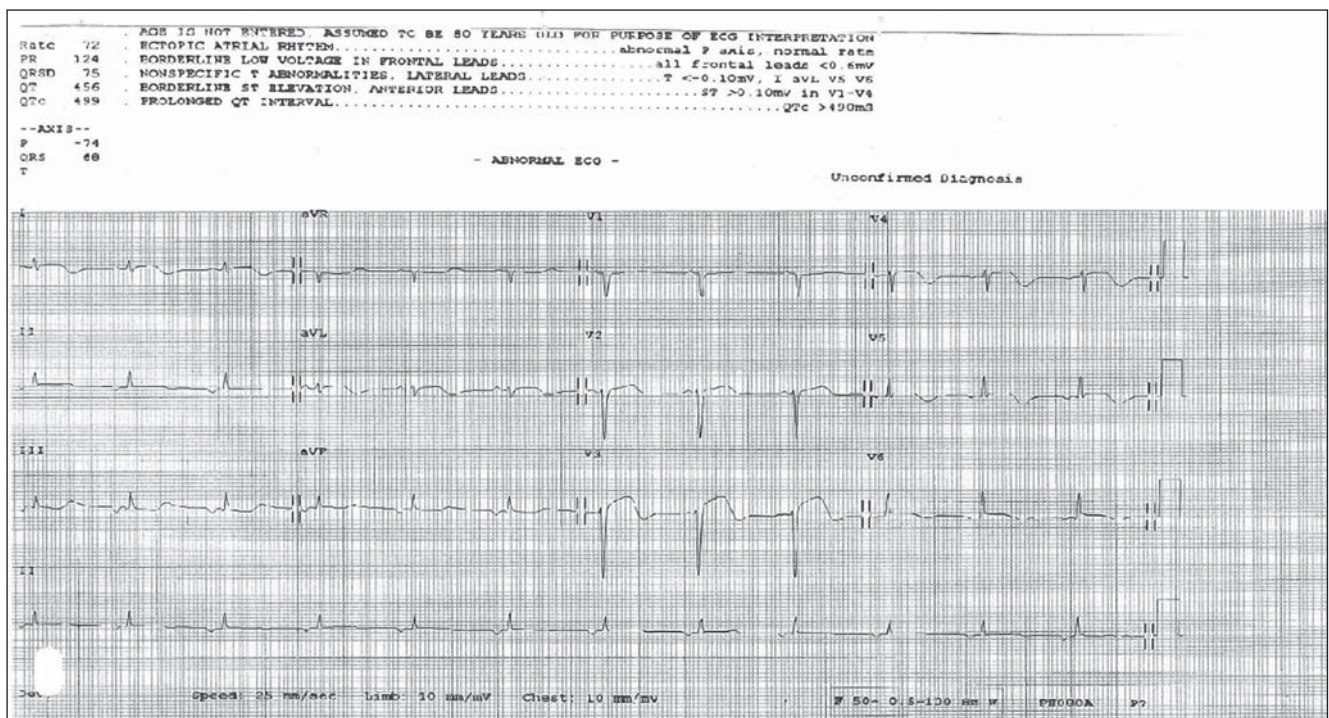


Fig. 1 – Emergency department electrocardiogram demonstrating marked ST segment elevation in anterolateral leads.

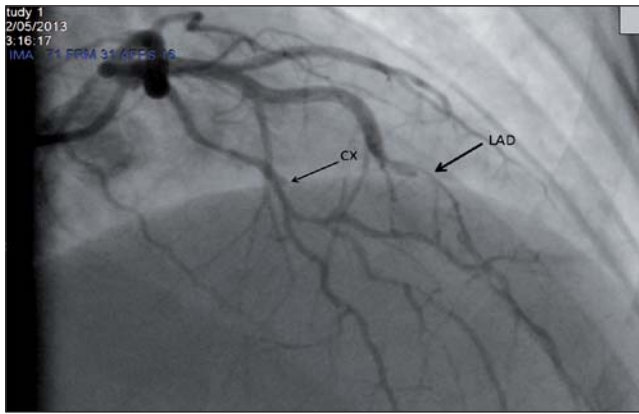


Fig. 2 – Coronary angiography showing flow limiting spiral dissection in LAD and non-flow limiting discrete lesion in Cx artery in right cranial view.

The clinical diagnosis of AMI in peripartum is based on symptoms, ECG changes and cardiac markers, as in non-pregnant patients. Other differential diagnosis of chest pain, such as pulmonary embolism, aortic dissection, myocarditis, Takatsubo cardiomyopathy should be thoroughly evaluated and excluded. The classic symptom of AMI are severe, crushing substernal chest pain described as a squeezing or constricting sensation with frequent radiation to left arm or low jaw. The chest pain usually lasts more than 20 min. Peak intensity is not instantaneous, as it would be with pulmonary embolus or aortic dissection. Echocardiography is a safe and rapid tool for evaluation of these diseases without proceeding directly with CAG. We did echocardiography in our case with the suspicion of aortic dissection which could lead to a catastrophic situation with the use of heparin and clopidogrel during CAG. Bearing in mind that pharmacologic reperfusion either with fibrinolytic or glycoprotein IIb/IIIa antagonist is relatively contraindicated in case of coronary artery dissection, the definite diagnosis and treatment are based on coronary angiography and mechanical reperfusion. Although there have been case reports of successfully treated patients with thrombolytics [6], there is also anecdotal and theoretical evidence that thrombolytic agents may further cause extension of dissection plane [7]. It has also been recommended that using thrombolytics for at least 2 weeks after delivery should be avoided [8]. Treatment with percutaneous transluminal angioplasty and bare metal stenting where necessary seems reasonable. The safety of drug eluting stents is unknown, and the necessity for prolonged dual antiplatelet therapy makes their use in this context problematic. There are also concerns that DES could delay the healing process in the vessel wall of patients with SCAD [9]. Safety of standard treatment in infarction remains uncertain for pregnant or breastfeeding patients. Low dose aspirin seems safe, as are nitrates, heparin, nifedipin and certain beta blockers (metoprolol, atenolol). There are very little data for clopidogrel. ACE inhibitors and angiotensin receptor blockers are teratogenic; their use in breastfeeding is under debate, as is the prescription of statins.

Conclusion

Acute myocardial infarction during pregnancy or the early post-partum period is rare but increasingly frequent event. Other differential diagnosis and non-atherosclerotic causes of MI should be thoroughly searched by echocardiography. Spontaneous coronary artery dissection should be suspected in this patient population. The treatment should be urgent coronary angiography, with a consideration of percutaneous coronary intervention and stenting. Medication should be given taking into consideration of both maternal risk as well as foetal or baby risk in breastfeeding woman.

Conflict of interest

None declared.

Funding body

None.

Ethical statement

Authors state that the research was conducted according to ethical standards.

Informed consent

We have informed consent from the patient for publication of the case and we are grateful to the patient and his/her family for their cooperation. We also declare that there is no image or clue that will enable his/her identity to come out.

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