Acute Coronary Syndrome in Women at Full Term Pregnancy

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Abstract

The risk of acute myocardial infarction in young women is low, but increases during pregnancy due to the physiological changes in pregnancy, including hypercoagulability. We present a unique case of coronary ischemia in a 40-year-old patient who is pregnant in a full term pregnancy, clinical findings were thoroughly discussed.

Keywords: Case Report; Pregnancy; Myocardial Infarction; Ischemic Heart Disease

Background

The risk of acute myocardial infarction in young women is low, but increases during pregnancy due to the physiological changes in pregnancy, including hypercoagulability. Ischemic heart disease during pregnancy is not only associated with increased maternal morbidity and mortality, but also with high neonatal complications [1,2].

Advancing maternal age and other risk factors for cardiovascular diseases may further increase the risk of ischemic heart disease in young women. Spontaneous coronary artery dissection is a rare cause of acute coronary syndrome, particularly seen in women during pregnancy or in the puerperium [3,4].

We present a unique case of coronary ischemia in a 40-year-old patient who is pregnant in a full term pregnancy, clinical findings were thoroughly discussed.

Case Presentation

A 40-year-old woman presented at our cardiology department with chest pain.

She had not a history of alcohol and recreational drug abuse. Other no risk factors for cardiovascular diseases (no hypertension and hypercholesterolemia) and no smoking. The patient did not report familiarity with ischemic heart disease. She presented with typical angina and chest pain.

The patient arrived from home, the course of pregnancy had been normal and the patient was 40 weeks pregnant. The patient was examined and checked by her gynecologist colleagues. They did a cervical examine (evaluation to dilatation, ripeness, position of the baby and position of the cervix) and they checked blood pressure. They also checked the child’s condition with ultrasound (checking the amount of fetal fluid and fetal movements): the conditions of the fetus were judged stable.

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Physical examination showed a pale woman with clammy skin. She was hypotensive, accepted with pregnancy (blood pressure 87/53 mm Hg), with a heart rate of 80 beats per minute.

Cardiac auscultation showed no abnormalities.

Electrocardiogram (ECG) showed ST elevation in V2-V6 (Figure 1A and 1B). Echocardiography showed an EF 45 - 50%, segmental wall motion in left descending artery distribution. A coronary angiography was performed (Figure 2 and 3). In accordance to the ESC 2018 guidelines, we did not use IVS because we suspected coronary dissection. The patient throughout her pregnancy she had taken cardioaspirin 81 mg and a bolus of heparin was administered before performing the coronary angiograph.

Figure 1A and 1B: Electrocardiogram (ECG) showed ST elevation in V2-V6.
Figure 2: Angiography of the left anterior descending artery; angiogram (right anterior oblique caudal projection) showing possible dissection of the anterior descending artery and occlusion in the distal area.

Figure 3: Angiography of the left anterior descending artery; angiogram (left anterior oblique projection) showing possible dissection of the anterior descending artery and occlusion in the distal area.
The patient was hemodynamically stable and was admitted to the CCU. It was decided in a collegiate agreement between anesthetists, cardiologists, cardiac surgeons, gynecologists and neonatologists to perform an elective caesarean in our Cardiac Center, where full cardiac support is available and can be provided. Both general anesthesia and preoperative IABP (percutaneous procedure) were initiated. A single bolus of heparin was administered before placing IABP.

The patient has maintained a good haemodynamic stability throughout the operation.

No electrocardiographic changes were reported during the whole procedure (Figure 4). At birth, the child was in excellent condition and did not present without any neonatal suffering. Her hospital stay was uneventful and she was discharged after five days; her condition was stable. During follow-up, she was admitted to a cardiac rehabilitation program and was encouraged to alter her high-risk lifestyle and she was informed to have coronary angiography after 3 months as recommended by cardiac medical team. After three months, the patient in NYHA I asymptomatic performed transthoracic echocardiogram which showed EF 55% without alterations of segmental kinesis. Coronary angiography has not been performed.

Discussion and Conclusion

This is the first identified case of pregnancy-related acute ischemic myocardial infarction in a full term pregnancy in our hospital. The patient was diagnosed as to have a coronary artery dissection, which is rare outside pregnancy, is one of the main aetiologies of acute myocardial infarction during pregnancy or the postpartum period, but it is a first case to be recorded at full term pregnancy about the time of delivery [5-7].

The pathogenesis of SCAD is unknown. The body undergoes different hormonal and hemodynamic changes during pregnancy and in the post-partum period; it may take upto six months after delivery for the body to achieve the pre-pregnancy status. Several theories have been postulated with regards to p-SCAD.

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It is suggested that the morphological changes in arterial wall associated with hemodynamic changes may be a contributory factor. Excess progesterone during pregnancy induces the loss of normal corrugation of elastic fibers and degeneration of medial wall collagen and all this may result in weakening of the arterial wall leading to arterial dissection [8].

Gold standard exam is coronary angiography to confirm or exclude the presence of coronary artery dissection. And usually conservative management is a preferred method when dissection is highly expected.

Intervention is the preferred treatment in women with STEMI or non-STEMI who have risk factors, according to current guidelines [9]. Bare metal stents are preferred over drug-eluting stents in pregnant women, because prolonged dual anti-platelet therapy is preferably avoided [10,11].

Medical treatment may include beta blockers and acetylsalicylic acid. Clopidogrel, though safe in animal studies, should be used with caution since experience in humans is limited. ACE-inhibitors and angiotensin receptor blockers are contra-indicated during pregnancy. Vaginal delivery is usually appropriate [12]. Standard IHD risk factor management such as reducing smoking habits, obesity, hypertension and hypercholesterolemia and treating lipoprotein disorders should be implemented.

Physicians should be aware of the increased risk of myocardial infarction when encountering pregnant or postpartum women presenting with chest pain.

The case we have presented is very rare.

A Heart Time Delivery was created for the first time in our center and this collaboration has been fundamental for the survival of the patient and the child. Timely diagnosis and careful physical examination, adequate therapy and serial controls have been the basis of our success.

Research Approval and Consent

The authors confirm that this case report was approved by Institutional Research board (IRB) at PSCCH and Inform consent was obtained from the patient to publish her case as a case report.

Conflict of Interest

None declared.

Author’s Contribution

Dr. Khalid Alkhamees: Cardiac surgeon.
Dr. Mohamed Ramadan: Cardiology consultant responsible for angiography.
Dr. Elena Grasso: Cardiac surgeon, the primary investigator and wrote the manuscript.
Dr. Ahmad Ibrahim: Responsible for review of the case report and publication process.

Bibliography


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