

Case Report

ST-Segment Elevation Myocardial Infarction (STEMI) of Atherosclerotic Etiology in a Pregnant Woman

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Abstract

During pregnancy, it is not expected for pregnant women to experience a heart attack, considering their age group and the incidence of comorbidities in this population. However, we should always be mindful of relevant precautions because, although rare, a heart attack can indeed occur in pregnant women. The classic symptom of a heart attack is chest pain, and it is not uncommon to face diagnostic challenges since numerous more common conditions during pregnancy can mimic this symptom, such as reflux, anxiety, and musculoskeletal pain. If a pregnant woman experiences any episode of chest pain during pregnancy, clinical evaluation is necessary, bearing in mind that although rare, it is among the possible types of heart attacks.

The treatment of a heart attack during pregnancy is extremely complex due to the scarcity of clinical data, challenges in drug management, and the physiological changes of pregnancy, as well as the stress of child birth leading to an increase in cardiac effort. Adequate prenatal care and support from referral hospital scan make a difference. In this report, we present a case of a pregnant patient with ST-segment Elevation Myocardial Infarction (STEMI).

Keywords: Heart attack during pregnancy; Pregnant women; ST-segment elevation myocardial infarction (STEMI); Management; Coronary artery pregnancy

Case Presentation

42-year-old woman, 22 weeks pregnant, with no known comorbidities or addictions, and a positive family history of early coronary artery disease. She was admitted with burning precordial pain associated with radiation to the jaw and left upper limb.

On admission, the electrocardiogram showed ST segment elevation in the inferior wall. A chest pain protocol was initiated, followed by performing coronary angiography, which detected a significant atherosclerotic lesion at the ostium of the first diagonal artery, along with an atherosclerotic lesion, considered culprit, subocclusive in the middle third of the circumflex artery, where a drug-eluting stent was implanted.

The echo cardiogram revealed a decrease in the left ventricular ejection fraction (48%), attributed to hypokinesis of the inferior basal segment and the anterolateral and inferolateral basal and mid segments.

The patient started therapy with Aspirin and Clopidogrel and remained without statins until the end of pregnancy. Con-

cerning the fetus, there was no fetal distress, and the patient continues to be monitored in a high-risk prenatal setting with cardiology, obstetrics, and endocrinology.

Discussion

The causes of heart attacks in pregnant women are broad and varied, and this has important implications regarding the diagnosis of etiology and management. Heart attack during pregnancy is a rare event, with an estimated incidence of 3 in every 100,000 births. Regarding the causes, coronary artery dissection is the primary cause, responsible for up to 45% of cases, followed by thrombosis, vasospasm, and atherosclerosis disease. The mortality rate of a heart attack during pregnancy reaches 20%, and due to physiological changes in pregnancy, the risk of heart attack in pregnant women is four times higher than in non-pregnant women in the same age group.

The symptoms of a heart attack in pregnant women can be similar to those in non-pregnant women, including chest pain, shortness of breath, sweating, and nausea. However, these

symptom scan beat attributed to other pregnancy-related conditions, which can make early diagnosis difficult.

The treatment of heart attacks in pregnant women involves a multidisciplinary approach, with the involvement of obstetricians, cardiologists, and other specialists. The main goal is to preserve the health of both the mother and the fetus. Pharmacological treatment should follow current guidelines. In the post-heart attack period, cases should be individualized due to the scarcity of data in the literature on platelet antiaggregants, statins, and beta-blockers.

Conclusion

The management of heart attacks in pregnant patients is challenging due to the lack of consistent evidence on the safety of standard therapies. Treating a heart attack in pregnant women requires a multidisciplinary approach, involving obstetricians, cardiologists, and other specialists, with the primary goal of preserving the health of both them other and the fetus.

Preventing heart attacks in pregnant women is crucial. Women with risk factors should receive adequate prenatal care and close monitoring during pregnancy. Adopting a healthy lifestyle, including a balanced diet, regular physical exercise, and avoiding smoking, is essential.

In cases of suspected heart attack during pregnancy, seeking immediate medical attention is fundamental. Early diagnosis and treatment can help reduced am age to the heart and improve the prognosis for both the mother and the fetus.

References

- Ismail S, Wong C, Rajan P, Vidovich MI. ST-elevation acute myocardial infarction in pregnancy: 2016 update. *Clin Cardiol.* 2017; 40: 399-406.
- Edu puganti MM, Ganga V. Acute myocardial infarction in pregnancy: Current diagnosis and management approaches. *Indian Heart J.* 2019; 71: 367-74.
- Sun Z, Zhang Q, Zhao H, Yan C, Yang HJ, Li D, et al. Retrospective assessment of at-risk myocardium in reperfused acute myocardial infarction patients using contrast-enhanced balanced steady-state free-precession cardiovascular magnetic resonance at 3T with SPECT validation. *J Cardiovasc Magn Reson.* 2021; 23: 25.
- Wang C, Zhou L, Liang Y, Liu P, Yuan W. Interaction of ST-elevation myocardial infarction, age, and sex and the risk of major adverse cardiovascular events among Chinese adults: a secondary analysis of a single-centre prospective cohort. *BMJ Open.* 2022; 12: e058494.
- Partow-Navid R, Prasitlumkum N, Mukherjee A, Varadarajan P, Pai RG. Management of ST Elevation Myocardial Infarction (STEMI) in different settings. *Int J Angiol.* 2021; 30: 67-75.
- Regitz-Zagrosek V, Gohlke-Barwolf C, Jung B, Pieper PG. Management of cardiovascular diseases during pregnancy. *Curr Probl Cardiol.* 2014; 39: 85-151.
- American College of Obstetricians and Gynecologists' Presidential Task Force on Pregnancy and Heart Disease and Committee on Practice Bulletins—Obstetrics. ACOG Practice Bulletin No. 212. ACOG Practice Bulletin No. 212: Pregnancy and Heart Disease. *Obstet Gynecol.* 2019; 133: e320-56.
- ACC/AHA guidelines for the management of patients with valvular heart disease. A report of the American College of Cardiology/American Heart Association. Task force on Practice Guidelines (Committee on management of Patients with valvular heart disease). *J Am Coll Cardiol.* 1998; 32: 1486-588.
- Eur Heart J.* 2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy: The Task Force for the Management of Cardiovascular Diseases during Pregnancy of the European Society of Cardiology. 2018; 39: 3165-241.
- Mehta LS, Warnes CA, Bradley E, Burton T, Economy K, Mehran R, et al. Cardiovascular considerations in caring for Pregnant Patients: A Scientific Statement From the American Heart Association. *Circulation.* 2020; 141: e884-903.