

MANAGEMENT OF ST ELEVATION MYOCARDIAL INFARCTION (STEMI) IN PREGNANCY

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ABSTRACT

A 28-year-old lady in the third trimester of pregnancy presented to the emergency department having history of recurrent chest pain for the last four days. A 12-lead ECG showed anterior ST elevation myocardial infarction. She was treated conservatively. Echocardiography and coronary angiography was done. This case report examines the relatively rare entity of myocardial infarction in pregnancy and looks at the mechanisms underlying the condition.

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BACKGROUND:

Cardiac disease is the single most common cause of maternal death in the UK.¹ Myocardial infarction in pregnancy is a devastating event for mother and baby and is a management challenge for clinicians. Successful treatment of thrombus as a cause of myocardial infarction has been reported in only a handful of cases. This case illustrates that close collaboration of multidisciplinary team efforts can lead to a favourable outcome for mother and child following myocardial infarction in pregnancy.

CASE PRESENTATION:

A 28-year-old lady, 31 weeks of her first pregnancy, suffered a recurrent chest pain for the last four days. Initially she went to some local hospital where her ECG showed anterior ST elevation myocardial infarction and she was referred to our hospital for further management.

The patient was loaded with aspirin, clopidogrel and unfractionated heparin. Echocardiography showed normal biventricular systolic function with no wall motion abnormality. Coronary angiography showed that right coronary and circumflex arteries were smooth and unobstructed. The left anterior descending (LAD) artery showed linear thrombus throughout its course. (Figure 1) and was anticoagulated with warfarin and discharged home 09 days after admission.

DISCUSSION:

The incidence of acute myocardial infarction (AMI) in pregnancy ranges from 3 to 100 per 100 000 deliveries.² The maternal fatality is as high as 11%, with an associated fetal mortality of 9%. It



Figure-1: Coronary Angiogram showing linear thrombus in LAD

is reported that coronary artery dissection is found in 16%, thrombus without atherosclerotic disease in 21%, normal coronary arteries in 29%, and atherosclerosis with or without intracoronary thrombus in 43% of cases.² In contrast, the majority of cases of AMI in the general population are due to coronary thrombosis associated with a disrupted atherosclerotic plaque.³ One of the proposed pathologic processes in pregnancy is the excess progesterone leading to degeneration of the connective tissue in the intima and media of the coronary arteries. Pregnancy-related hypertension, along with physiologic increase in blood volume and cardiac output in pregnancy, may present additional stress to blood vessels and increase the risk of coronary dissection and thrombotic rupture.² Despite this distinctive underlying pathophysiology, traditional risk factors for cardiovascular disease have been linked to pregnancy-related AMI. Age greater than 30 years, African American race, hypertension, diabetes, physical inactivity, and smoking have been previously reported in the literature.³ Certain obstetric conditions are additional important risk

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factors for AMI, including preeclampsia, thrombophilia, postpartum hemorrhage, blood product transfusion, and postpartum infection.² AMI can occur during any trimester, and each trimester carries its own diagnoses and treatment challenges. Early in pregnancy, at the height of organogenesis, the teratogenic risk of pharmacologic therapy and radiation exposure during cardiac catheterization are of foremost concern. In the later stages of pregnancy, balancing the risk of bleeding during delivery against the risk of stent thrombosis if dual antiplatelet therapy (DAPT) is discontinued is the main challenge.

An emergency angiography has clear advantages over fibrinolysis in managing STEMI in pregnancy reducing the risk of major bleeding in the mother and unborn child.

Pregnancy poses several challenges to both the diagnosis of ACS and management of STEMI. Standardizing the approach to its treatment may minimize maternal and fetal complications. The approach to the diagnosis of ACS in pregnancy is similar to that in nonpregnant patients with the

exceptions of a few considerations. Coronary angiography remains the gold standard for diagnosis, and concerns about ionized radiation exposure should not delay this potentially life-saving intervention. PCI should be performed via the radial approach. DES or BMS may be employed, depending on the stage of pregnancy. DAPT may be interrupted by delivery; however, with the favorable characteristics of new-generation DES, this may be accomplished with lower risk of stent thrombosis. Most importantly, employing a multidisciplinary team and monitoring patients in the critical care setting is unarguably essential for the care for this special population.

LEARNING POINTS:

Emergency angiography is superior to thrombolysis through reduced risk of major bleeding and in its ability to treat coronary dissection and aspirate embolic material.

Myocardial infarction in pregnancy often involves mechanisms other than plaque rupture, which is important when planning investigations.

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