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Case Report

Pregnancy with prior coronary artery disease: Specific concerns

Madhusudan Dey^{a,*}, Ipsita Sahoo^b, Sushil Chawla^c,
Meenakshi Rajput^b

^a IFH Level-II, Malakal, South Sudan (UNMISS)

^b Resident, Dept of Obst & Gyn, Armed Forces Medical College, Pune 411040, India

^c Associate Professor, Dept of Obst & Gyn, Armed Forces Medical College, Pune 411040, India

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Introduction

Coronary Artery Disease (CAD) is very rare during pregnancy and it complicates about 0.01% of all pregnancies. The incidence of cardiovascular disease occurs in 0.4–4.1% of pregnant women.¹ Hypercoagulability, changes in blood volume, heart rate and cardiac output increase myocardial oxygen demand, which may induce angina or heart failure. Blood pressure alterations and labour pains predispose to complications related to myocardial ischaemia. The advisability of pregnancy after Myocardial Infarction (MI) is unclear. Presence of myocardial ischaemia, status of the coronary artery anatomy and residual ventricular function influence the

risks associated with subsequent pregnancies.² A team involving cardiac and obstetric specialists for evaluation and monitoring of such cases are mandatory in pregnancies post MI.³ We report successful outcome of a 35 year old pregnant female patient with history of myocardial infarction treated with angioplasty and stent to left anterior descending artery (LAD).

Case report

A 35-year-old G2A1 lady presented to our antenatal OPD at 6W5D gestation. She was a known case of Type II diabetes mellitus and chronic hypertension since past two years, well controlled on Tab Metformin 500 mg twice daily and Tab Labetalol 100 mg once daily. 4 months prior to this antenatal visit, she had developed sudden onset anginal chest pain and shortness of breath. She was then admitted in a multi-speciality hospital and diagnosed to have non ST elevation myocardial infarction by the cardiologist. Her blood pressure was 140/100 mm Hg. ECG showed T wave inversion leads I, V2–V6 (Fig. 1). Troponin T was positive. Coronary angiography demonstrated critical 90% occlusion in LAD (Fig. 2). Under antiplatelet and anticoagulant cover, percutaneous transluminal coronary angioplasty with drug eluting stent was done by cardiologist in the hospital followed by excellent flow in involved artery.

Patient conceived two months after this episode of MI. On her first visit to our antenatal OPD, her pulse was 90/min, BP was 136/90 mm Hg and blood sugar Fasting/Post Prandial was 186/240. That time she was on Tab Metformin 500 mg twice

* Corresponding author.

E-mail address: deym1@yahoo.com (M. Dey).

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Fig. 1 – ECG showing T wave inversion in lead I, V2-6.

Fig. 2 – Angiography showing 90% blockage in LAD.

daily, Tab Labetalol 100 mg daily, Tab Ecosprin 75 mg daily, Tab Clopidogrel 75 mg daily. Because of poor glycemic control, she was started on Inj Insulin. Rest of the medications were continued in pregnancy.

Aneuploidy screening at 12 weeks gestation was low risk and sonogram at 19 weeks showed no anomalies. ECG in first trimester was normal. Fundoscopy had no changes of diabetic or hypertensive retinopathy.

Patient visited the antenatal OPD regularly throughout. Sugar profile was carried out every 2 week interval. Therapeutic

management included continuation of previous medication, diabetic diet and Inj Insulin Lispro 6-6-6 units and Inj Glargine 12 units at bedtime for adequate glycemic control. She remained normotensive with Tab Labetalol 100 mg daily. At 30 week gestation, steroid induction was done with 4 doses of Inj Dexamethasone.

At 34 weeks, the obstetric sonography showed intrauterine growth restriction with raised umbilical artery S/D ratio on Doppler studies. Blood pressure was 160/96 mm Hg. Patient was admitted and put under IUGR surveillance. Dose of

antihypertensive was increased to Tab Labetalol 100 mg twice daily. 2D Echo done by cardiologist at this juncture revealed left ventricular ejection fraction of 49% and no valvular abnormality. The pregnancy was terminated by caesarean section at 37 weeks under general anaesthesia. A male baby of 1.99 kg was delivered. Tab Aspirin and Tab Clopidogrel were withheld 5 days prior to surgery. She remained hemodynamically stable intraoperatively and there were no ischaemic changes on ECG. Total blood loss was 500 cc. On post op day 1, Aspirin and Clopidogrel were resumed. On day 4, mother and baby were discharged in good health from hospital with advice to follow up in 2 weeks in cardiology and gynaecology OPD.

Discussion

Pre pregnancy risk assessment plays a crucial role in management of women with history of myocardial infarction and angioplasty. Women with significantly reduced ejection, heart failure symptoms, angina or untreated advanced changes in coronary arteries should be decrease risk in this group of patients. Among the risk factors for CAD, our patient had hypertension, diabetes mellitus and tobacco chewing. The maternal gestation risk was increased by advanced age of the patient.

Because of its potential harmful or teratogenicity, pharmacotherapy typical for post MI patients, although beneficial in general, is not widely recommended in pregnant women.¹ Maternal therapeutic interventions comprise rest, blood pressure control, use of beta blocker, acetylsalicylic acid. Two types of stent can be used for treatment of myocardial infarction namely drug eluting stent (DES) and bare metal stent (BMS). BMS still remain preferred choice over DES as DES is generally avoided due to necessary long term requirement of both Aspirin and Clopidogrel. In our case during the placement of stent, the physicians were unaware of possibility of pregnancy as the patient was in her follicular phase. The duration of dual antiplatelet therapy after stent placement when the pregnancy continues and results in labour and delivery is not well established. Use of unfractionated heparin or low molecular weight heparin (LMWH) is safe during pregnancy and it is recommended to stop 1 day prior to delivery. Continuation of Aspirin and Clopidogrel for at least 4 weeks for BMS and 12 months for DES is recommended unless there is a bleeding complication and for this reason, BMS is preferred during pregnancy.⁴ Epidural or any regional anaesthesia is contraindicated in patients with dual antiplatelet therapy.

In our patient, blood pressure was controlled with Tab Labetalol, optimization of sugar levels was done with Insulin and she was on Aspirin and Clopidogrel throughout pregnancy. All anticoagulant and antiplatelet agents increase risk of bleeding. Clopidogrel is recommended to stop 5–7 days before caesarean section⁵ as was done in our case. Whether it is useful to give prophylactic platelets before delivery is unclear.

Vaginal delivery is preferable in patients who are without significant post infarction myocardial injury and also have effective myocardial revascularization and on optimal pharmacotherapy during pregnancy.¹ Careful monitoring of patient during labour is necessary because of risk of recurrent

myocardial ischaemia or chances of heart failure. Delivery by caesarean section is an obstetric indication although the advantages are better control of time of delivery and avoidance of stressful labour.³ Disadvantages are added anaesthetic and surgical risks. In our patient, caesarean section was done in view of growth restriction with deranged Doppler studies. Despite the presence of numerous predetermined factors that increase neonatal morbidity (IUGR, low birth weight), in association with maternal diseases (hypertension, CAD, diabetes), our newborn infant had a good outcome. Maternal clinical stabilization prevented complications related to the underlying heart disease.

Conclusion

Pregnancy in patients after myocardial infarction with angioplasty and normal left ventricular ejection fraction seems to be possible and safe which was corroborated in our case report. Early comprehensive surgical revascularisation provided the setting for normal subsequent pregnancy at 2 months after angioplasty. Effective antenatal surveillance and management of risk factors lead to a favourable impact on mother and foetus. Low dose of Aspirin is safe in pregnancy and is to be continued. The mode of delivery which imposes least burden on heart is to be adopted. Conception is discouraged in patients who have significantly reduced left ventricular ejection fraction or symptomatic heart failure.

Conflicts of interest

The authors have none to declare.

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