PJC Vol 23, No. 1 - 4
January — December 2012

DELIVERY DURING ONGOING MYOCARDIAL INFARCTION: A CASE REPORT WITH LITERATURE REVIEW

NAVEED AKHTAR[1], YASSER JALIL KHAN[2], NABIA TARIQ[3], HABIB-UR-REHMAN[4]

Acute myocardial infarction in pregnancy is rare occurrence but with potentially lethal implications for both maternal and fetal outcome. The pathogenesis of acute myocardial infarction in pregnancy are diverse but generally associated with the coagulative and physiological changes related to the pregnancy. We report for the first time a unique case scenario of combined prosthetic valve thrombosis and acute myocardial infarction in peripartum period, which was successfully managed with coronary stenting.

PJC 2012; 23: 38-40

INTRODUCTION

Cardiovascular disease complicates nearly 0.4% to 4% of all pregnancies. Even though it is rare, the incidence of acute myocardial infarction is estimated at 0.6 to one per 10,000 pregnancies, with a case fatality rate of 5.1% to 37% .[1] A recent report revealed a maternal mortality rate of 11% mostly occurring at the time of infarction or within two weeks. The mortality was twice as high when acute MI occurred during peripartum period in comparison to mortality observed during antepartum and postpartum period.[2] We report a complex scenario of combined prosthetic valve thrombosis and acute myocardial infarction successfully treated with coronary stenting in peripartum period.

1. *Associate Professor of Cardiology.*
2. *Cardiology Fellow*
3. *Consultant Gyaenacology & Obstetrics.*
4. *Consultant Cardiologist*

Corresponding Author:
Dr. Naveed Akhtar
Associate Professor of Cardiology
Shifa International Hospital
H-8, Islamabad, Pakistan
Email: samraakhtar72@yahoo.com

CASE REPORT

A 37 years old lady, gravida 6 para 5 at 16 weeks of gestation was referred for evaluation of a cardiac murmur and pre syncopal episodes. Cardiac examination revealed an ejection systolic murmur of grade III/VI, maximally heard at aortic area, increased on expiration and radiating to the neck, suggestive of aortic stenosis. Transthoracic echocardiogram revealed a heavily calcified aortic valve with mean gradient of around 59 mmHg and aortic valve area of 0.39cm2, fulfilling the criteria of severe aortic stenosis. Subsequent transesophageal echocardiogram showed heavily calcified bicuspid aortic valve with no evidence of aortic membranes.

Keeping in view of critical aortic stenosis with symptoms of presyncope, she was labeled as a case of very high risk pregnancy. Multi disciplinary team approach was carried out. It was decided that the benefits of aortic valve replacement during pregnancy outweigh the risk of her current critical status. Aortic valve was successfully replaced with carbomedic bi-leaflet 25mm prosthesis. Her post operative echocardiogram showed mean gradient of 14 mmHg. She was discharged on Warfarin 5mg po/day and was advised to keep good liaison with

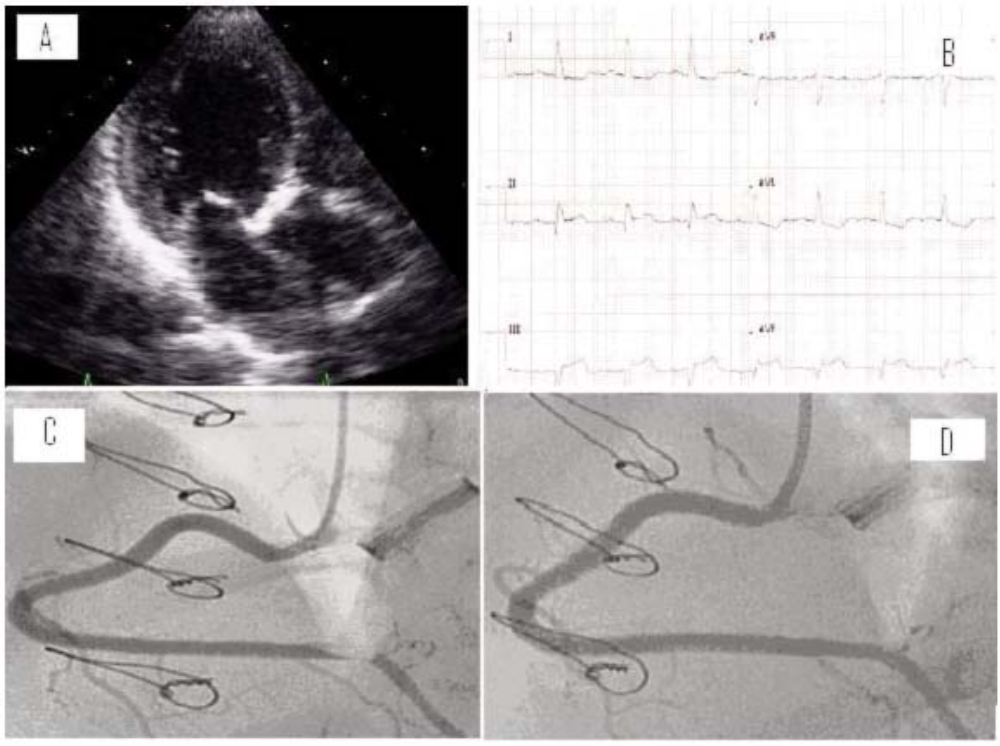
primary obstetrician and the cardiologist regarding switching over to low molecular weight heparin (Enoxaparin) in mid third trimester.

She presented on 37th week of gestation with acute inferior wall ST elevation myocardial infarction and had raised cardiac biomarkers, while on optimal dose of enoxaparin. Her 2-D Echocardiogram showed inferior wall hypokinesia with peak gradient of 55.8mmHg and mean gradient of 29.3mmHg across aortic valve with evidence of thrombosed aortic prosthesis. She was started on unfractionated heparin infusion with close monitoring of hemodynamics.

The options of thrombolysis and redo surgery were discussed, mean while she started having labor. At this time, the risks of spontaneous vaginal delivery verses caesarean section was assessed. While planning for spontaneous vaginal delivery, multiple risk factors were considered including thrombosed aortic valve, ongoing MI, heparin infusion and stress of labor. Keeping in view that cessation of heparin might cause accelerated thrombosis of aortic prosthesis if cesarean section is planned. It was decided to proceed with induction of labor with vaginal Mesoprostol 50mg. During first stage of labor, she developed transient ST elevations in inferior leads and intermittent Mobitz type II AV Block that resolved immediately after completion of labor. She delivered a full term healthy male baby vaginally in CCU without complications.

Her coronary angiogram was carried out that showed 95% focal filling defect in mid RCA, likely organized thrombus and bare metal stent was successfully deployed. (Fig. 1) Patient was kept under observation for 5-6 days. Serial echocardiograms were done to look for gradient across the aortic valve which was found to be coming down and eventually came to baseline. She was discharged after placing Levonorgestril Intrauterine System (LNG-IUS) for contraception 1 week after delivery.

Figure 1: Showing (A) Transthoracic echocardiogram showing apical three chamber view with heavily calcified aortic valve.(B)ECG showing acute ST elevation Inferior wall MI. (C) Coronary angiogram with critical Right Coronary Artery filling defect showing organized Thrombus.(D) RCA after deployment of Bare Metal stent.



PJC Vol 23, No. 1 - 4
January — December 2012

DISCUSSION

The impact of coronary artery disease on the mother and fetus is profound. The prevalence of coronary artery disease in pregnancy is increasing across the globe due to the continuing trend of childbearing at older ages and advances in reproductive technology enabling many older women to conceive. Acute myocardial infarction during pregnancy or the early postpartum period is rare event but bears the problem of misdiagnosis on one hand and is associated with 3-4 fold risk of maternal and fetal mortality on the other, however; the management should follow the usual principles of care for acute myocardial infarction.[3] Both maternal and fetal considerations should affect the choice of therapy which should be established by both the cardiologist and the obstetrician. In previous studies only 10 out of 103 patients with pregnancy related myocardial infarction were delivered through cesarean section, a rate lower than the contemporary rate of 30 % in general population. This data supports that the vaginal delivery can be accomplished relatively safely in stable patients with pregnancy related myocardial infarction.

The recently published data compiling the outcome of total of 103 pregnancies with myocardial infarction broadly categorizes the patients into three groups, antepartum (n=46), peripartum (n=22) and postpartum (n=35). Coronary angiogram was performed in 92 out of 103 patients. Only 38 of 92 patients (23 ante partum, 6 peripartum and 9 post partum) underwent PCI , with stent placement in 55% of these patients. The 6 reported peri partum cases undergoing PCI had coronary stenosis as underlying cause of myocardial infarction.[4] In peripartum group, there is just a single reported case of acute myocardial infarction due to thrombus formation which was due to vasculitic disorder of systemic lupus erythematosis.[5] We report for the first time a unique case scenario of combined prosthetic valve thrombosis and acute myocardial infarction in peripartum period The successful management of this complex case managed with coronary stenting is encouraging that spontaneous vaginal delivery in CCU can be performed and cesarean section can be avoided so that there should be limited discontinuation of heparin, thus reducing the risk of further valve thrombosis.[6]

REFERENCES

1. Kealey AJ. Coronary artery disease and myocardial infarction in pregnancy: a review of epidemiology, diagnosis, and medical and surgical management. Can J Cardiol 2010;26(6):e185-e189.

2. Poh CL, Lee CH. Acute myocardial infarction in pregnant women. Ann Acad Med Singapore 2010;39:247-53$_1$

3. Leonhardt G, Gaul C, Nietsch HH, Buerke M,Schleussner E. Thrombolytic therapy in pregnancy. J thromb thrombolysis 2006; 21:271-6

4. Arie Roth, Uri Elkayam. Acute Myocardial Infarction with pregnancy. J am Coll cardiol.2008;52;171-180

5. Badui E, Enciso R. Acute myocardial infarction during pregnancy and puerperium: a review. Angiology 1996;47:739-56.

6. Ecker J, Frigoletto F. Cesarean delivery and the benefit calculus. N Engl J Med2007;356:885-8