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A Case Report of Severe Aortic Stenosis in Pregnancy

Madan Anita¹, Kaur Jagdeep², Yadukula Yashasvini³, Neki NS⁴

¹Associate Professor, Department of Obstetrics & Gynecology, GMC, Amritsar, India; ²Assistant Professor, Department of Obstetrics & Gynecology, GMC, Amritsar, India; ³Junior Resident, Department of Obstetrics & Gynecology, GMC, Amritsar, India; ⁴Professor, Department of General Medicine, GMC, Amritsar, India.

ABSTRACT

Introduction: Aortic stenosis in pregnancy is rare. It may be congenital or rheumatic in etiology. Stenosis of mild to moderate grade is tolerated well in pregnancy, but severe stenosis with a valve area of <1cm² is associated with high maternal mortality. Pregnancy is associated with significant haemodynamic changes that may increase the risk of thrombo-embolic events and cardiac failure. Advances in neonatal and pediatric medicine have allowed women with congenital heart defects to reach child-bearing age.

Case Report: Here, we report a case of 28-yr-old G3P2L2 at 39weeks of gestation with severe aortic stenosis and mild PAH who presented with complaints of chest pain and breathlessness on exertion and a multidisciplinary management of the patient during antepartum, intrapartum and postpartum periods was ensured.

Conclusion: Given the seriousness of valvular heart disease in pregnancy, women with congenital and acquired heart diseases should be managed in a tertiary care centre with a multidisciplinary approach throughout pregnancy.

Key Words: Cesareansection, Heart disease, Pregnancy, Severe aortic stenosis, Valvular disease, Pulmonary hypertension

INTRODUCTION

Cardiovascular diseases is one of the causes of maternal morbidity and mortality. With advancements in medicine and surgery, more women with acquired and congenital heart diseases are reaching child bearing age and desiring pregnancy.¹Valvular heart diseases due to rheumatic heart disease remains the leading cause of maternal cardiovascular morbidity and mortality.

In women of childbearing age, AS is secondary to congenital bicuspid valve, which may be associated with coarctation of aorta. Patients with AS develop left ventricular hypertrophy to generate the increased pressure necessary to pump blood through noncompliant valvular leaflets. Eventually, the left ventricular function fails to overcome the resistance to flow and patient develops CHF. Adverse maternal and fetal outcomes increase with severity of AS. The World Health Organisation (WHO) classification divides women with congenital and acquired heart disease into four classes, ranging from low risk to high risk. Women who fall into class IV i.e. in which there is extremely high risk of maternal morbidity

and mortality, pregnancy is contraindicated in them such as Pulmonary arterial hypertension of any cause, previous history of peripartum cardiomyopathy, severe mitral and aortic stenosis, Marfans syndrome and severe coarctation.²Women with severe AS are more likely to develop heart failure and atrial arrhythmias and have adverse fetal outcomes such as preterm birth and low birth weight.³ Multidisciplinary approach before and throughout pregnancy is required, because of the complexity of valvular heart diseases.⁴Cesarean section should be considered in severe particularly symptomatic aortic stenosis.

On account of its rarity and associated maternal complications, pregnancy with severe aortic stenosis needs effective management. We present a case of G3P2L2 with a known severe aortic stenosis and mild PAH.

CASE REPORT

A 28-year-old G3P2L2 at 39 weeks period of gestation reported to outpatient unit of Department of Obstetric and

Corresponding Author:

Yadukula Yashasvini, Junior Resident, Department of Obstetrics & Gynecology, Room No: 23, H block, Girls Hostel, Govt. Medical College, Amritsar, India; Mobile: 8688556092; E-mail: yash.yadukula@gmail.com

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Gynaecology, Government medical college, Amritsar referred from Civil Hospital, Beas with complaints of on and off chest pain, breathlessness and palpitations since 2months.

WHO RISK CLASSIFICATION

- I. No detectable increased risk of maternal mortality and no/mild increase in morbidity.
- II. Small increase risk of maternal mortality or moderate increase in morbidity.
- III. Markedly increased risk of maternal morbidity and mortality. Counselling of the experts required. Intensive cardiac and obstetric monitoring is required throughout pregnancy, delivery and puerperium.
- IV. Extremely high risk of maternal morbidity and mortality. Pregnancy is contraindicated in this women. Termination of pregnancy is advised if pregnancy occurs. If there is continuation of pregnancy, care as class III.

On General examination, pallor was present. No signs of icterus, cyanosis, clubbing, lymphadenopathy and oedema present. The a wave in Jugular venous pressure was raised. Patient had previous history of similar complaints in previous pregnancy but did not get any medical help. Family history was non-significant. Vitals of the patient were BP: 110/70 mm Hg PR: 85/min (regularly regular) with slow raising peak pulse, RR: 20/min SpO₂ = 94% at room air with no signs of distress and was afebrile. Dyspnea was of NYHA class II (on increased exertion). Systemic examination of the patient revealed a palpable thrill over the carotid arteries, more commonly on the left, Pan systolic murmur on auscultation at Aortic area, an audible S4 at the apex due to left ventricular hypertrophy and elevated left ventricular end diastolic pressure. Bilateral air entry was normal with no added sounds. Examination of other systems revealed normal findings.

A 12 lead ECG and a 2D echo of the patient was done.

ECG findings showed left axis deviation with left ventricular hypertrophy with left ventricular strain.

Echo findings revealed mild MR, mild TR, severe AS with area of valve 0.9cm², mean gradient of 42mm Hg and mild PAH.

Chest X-ray findings were unremarkable.

Class I: No limitation of physical activity.

Class II: Slight limitation of physical activity.

Class III: Marked limitation of physical activity.

Class IV: Dyspnea at rest.

NYHA : New York Heart Association.

Patient had spontaneous onset of labor. She was managed by a team of specialists including obstetricians, cardiologist

and intensivists. A propped up position with oxygen support was given. Restricted fluid was infused (75ml/hr). Vitals of the patient like BP, PR and auscultation of lung bases were monitored every half hourly. Antibiotic prophylaxis of Inj. Ceftriaxone 1gm IV was given. Second stage of labor was cut short with forceps delivery. Neonatologist was present during the delivery. Baby cried immediately after birth and was kept under observation in NICU. Active management of third stage of labor was done. Inj. Furosemide 40mg IV was given after delivery of the placenta to avoid pulmonary oedema. Tab. Misoprostol 800mcg was kept per rectum to prevent postpartum haemorrhage.

Patient was closely monitored for 24 hours after delivery in labor room. Patient and new born were discharged in a satisfactory condition. Counselling regarding correction of the stenosis by surgery and contraception was done prior to discharge.

DISCUSSION

Normal area of aortic valve is: 2-3 cm².

Size of <1.5cm² is associated with high maternal mortality (8-10% in moderate; 15-20% in severe stenosis). Aortic valve obstruction leads to left ventricular overload, increased ventricular end diastolic pressure and fall in ejection fraction. Cardiac output is reduced, causing a fall in cardiac, cerebral and uterine perfusion. Pulmonary edema, angina, syncope, arrhythmias, stroke and death can also occur. Perinatal mortality is up to 30%. Mild to moderate stenosis can be managed with close observation but severe stenosis requires bed rest and vigilant management. Severe aortic stenosis may require balloon valvotomy prior to pregnancy or during pregnancy.⁵

Isolated aortic stenosis is seen only in 2.8% of pregnant women with heart disease. Pulmonary hypertension as a complicating factor is seen in only 9% of the patients. This case is different from other patients of severe aortic stenosis as the patient was hemodynamically stable till her term (39 weeks) and delivered a term fetus.

CONCLUSION

Aortic stenosis is a rare complication of the rheumatic heart disease in pregnancy. Appropriate care and management of the patient with a heart disease during labor and postpartum can effectively reduce the mortality and morbidity. Counselling of the patients for the need of the surgery and discussion regarding future pregnancies should be done in order to prevent maternal and neonatal deaths.

This case is being reported, as the incidence of pregnancy in a patient with severe aortic stenosis is rare. Normally

patients of heart diseases preferably be delivered vaginally and cesarean section may be undertaken only for obstetrical conditions. But Aortic stenosis is one of the few indications where cesarean section is indicated. Pre-anaesthetic checkup was done for this patient, cardiologist opinion was sought and patient was declared unfit for anaesthesia and surgery. But in this scenario patient went into spontaneous labor and was delivered vaginally under supervision of team of doctors of various departments of Obstetric & Gynecology, Anesthesia and Cardiology. Such patients should be managed in a tertiary care centre where specialists are available for a multidisciplinary approach.

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