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# A Series of Case Report of Rheumatic Heart Disease in Pregnancy

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## I. Introduction

Inflammation and scarring of heartwhich is an autoimmune reaction triggered by infection due to group A streptococci is referred to as rheumatic heart disease. Chronic disease manifestationsare due tofibrosis of valvewhich results in insufficiency and/or stenosis. 1% to 3% of all pregnancies are complicated with cardiovascular disease and it is accounted for 10% to 15% of all maternal mortalities. RHD is accounted for nearly 90% of all CVS diseases among pregnant women in low income countries.This disease commonly affects the young women in reproductive age group.Sometimes the initial diagnosis is made in antenatal or postpartum period when their damaged valves cannot tolerate the physiological changes in pregnancy and therefore resulting in clinical decomposition.

Increased metabolic demands of both mother and fetus during pregnancy are metby changes induced in cardiovascular system,example blood volume and cardiac output increases and blood pressure and systemic vascular resistance decreases.30-50% increase in cardiac output is seen in normal pregnancy.The factor responsible for increase in cardiac output being stroke volume in early pregnancy and heart rate in late pregnancy.The tolerance seen during pregnancy is poor and seems to result from pregnancy-independent exercise capacity which is lowin addition to the increased cardiovascular demands during gestation, insufficient adaptation of the right heart and poor compliance of pulmonary vessels. Antenatal hospital admissions and mortality are higher with symptomatic mitral stenosis which is common mostly in post partum period.Managing valvular heart disease due to either congenital or acquired etiology is quite challenging in pregnant patients. There is also and increased incidence of adverse maternal and fetal outcomes in patient population.We present four cases of rheumatic heart disease in pregnancies with their outcomes.

## II. Case Report:

CASE 1- A 24 year old woman with gravida 2 abortion 1 was admitted in view of mild anemia and oligohydraminos(liquor index- 9) at 35+1 weeks of gestation. She was diagnosed with rheumatic heart disease with **moderate mitral stenosis with moderate mitral regurgitation** with pulmonary hypertension 2 years ago. She was operated for the same. She had **mitral valve replacement** with ATS metallic mitral prosthesis size 23 MM . She was on tablet warfarin since then . When she was first diagnosed with pregnancy , warfarin was stopped and she was started with tablet acitrom 4 mg OD. Through out the pregnancy close monitoring of INR and prothrombin time was done on out patient basis. She was posted for elective LSCS at 37 weeks of gestation . 5 days before lscs tab acitrom was stopped and inj lomoh 40 mg sc od was started. LSCS was uneventful. One unit whole blood was transfused under diuretics cover. Fluid management was maintained at 50 ml/hr. During discharge she was again shifted to Tab acitrom 4 mg OD. She was discharged from hospital with good general status.

CASE 2- A 23 year old primigravida was admitted at 36 weeks gestational agein view of severe anemia(hb- 6.9 g/dl) with known case of rheumatic heart disease with moderate mitral regurgitation and mild atrial regurgitation. Two units of PRC was transfused under diuretic cover. 2D ECHO was done which was suggestive of **moderate MR, mild AR**, normal LV/RV function, no TR and no PH. Elective LSCS was done at 37.2 weeks of gestation. LSCS was uneventful. On discharge patient was adviced tab atenolol 25 MG BD, tab enalapril 2.5 MG BD and tab Lasix 20 MG OD and for review 2D ECHO after 6 weeks.

CASE 3- A 33 yr old women with gravida 3 para 1 live 1 abortion 1 with known case of**mitral regurgitation and grade 1 diastolic dysfunction** with chronic hypertension which was diagnosed during first pregnancy. Patient was taking tab telmisartan od, tab ecosprin 75 mg hs, tab labetolol 100 mg bd, tab nicardia 10 mg bd,tab lacilactone od since 9 months. Elective LSCS was done at 36.4 weeks of gestation. LSCS was uneventful . Patient was shifted to High Dependency Unit for close monitoring of blood pressure . patient was discharged after 10 days on tabecosprin 75 mg HS and tab amlodepin 5 mg BD.

CASE 4- A 21 year old primigravida at 31.4 weeks gestation with twin pregnancy with known case of rheumatic heart disease with mitral stenosis admitted in hospital as her ultrasonography was suggestive of intrauterine demise of one fetus. She was diagnosed with RHD and **MS** 2 years ago after coming to casualty with complain of palpitations, fever with chills and orthopnoea.She was taking tab Metoprolol extended release 12.5 mg od since 2 years .On auscultation, mid diastolic murmur was present. Patient was mechanically induced by foleys catheter after infective endocarditis prophylaxis and she delivered vaginally baby A of 1.25 kg , shifted to NICU in view of respiratory distress and baby B of 450 mg with no signs of life. After delivery patient had sudden tachycardia so patient was managed with tab Metoprolol extended release 25 mg od , tab Lasix 20 mg od and fluid restriction of 40 ml/kg/hr. Patient was advised balloon valvuloplasty before conceiving again. She was discharged from hospital with good general status .

## III. Discussion:

Pregnancy in a valvular heart disease patient is challenging both for the patient and physician .It can be associated with unfavorablefetal and maternal outcomes.Therefore it becomes significant to understand how they are clinicallypresented and managed.

Four case of are presented with valvular damage that occured secondary to RHD .The first casereceived no preconception counseling and due to mechanical heart valve (MHV) which she had she was at higher risk. Its thrombogenicity is high and requiresanticoagulation treatment with warfarin prophylactically. In the second case patient had an additional complication of severe anemia which could result in maternal and fetal morbidity.The third case was high risk as patient had history of fetal demise in previous pregnancy which could be a result of rhematic heart disease in mother. Fourth case was a case of twin pregnancy with intrauterine demise of one fetus and patient was symptomatic antenatally and postnatally.In the post partum period until the hemodynamic changes come to normal a high degree surveillance is required,therefore this case carried a high risk. All four patients wereappropriately managed by an MDT.

Risks and benefits of transcatheter or surgical intervention should be discussed which is whether mechanical/bioprosthesis or valve repair should be done with such patients.If possible cardiac surgery is generally avoided during pregnancy.Thromboembolic complications related to pregnancy and anticoagulant therapy risk increases with mechanical heart valves. Limited durability is the challenge associated with Bio-prosthetic valves.However women who are hemodynamically stable with bio-prosthetic heart valves tolerate pregnancy very well andanticoagulationtherapy is not required in them.If other interventions can be instituted valve replacements in reproductive age group should be avoided.PBV is the preferred option because of relatively lower risk of maternal and foetal loss .

An increased risk of warfarin embryopathy andfetal loss is seen with warfarin which being the most reliable anticoagulant for women with mechanical heart valves. Hemorrhage in fetal organs is seen due to crossing of warfarin through placenta.The $6^{th}$and $9^{th}$weeks of gestation are the period associated with greatest risk of embryopathylike skeletal anomalies of skeleton and face.The second and third trimesters exposures result in abnormalities of central nervous system.An increased incidence of thromboembolism is seen with unfractionated heparin and LMWH in patients with MHVs.Warfarin causes increased risk of fetus having neural tube defects and all women taking warfarin should take 5mg folate supplementation.Preconception supplementation should be started.

The fourth case put on metoprolol to control persistent tachycardia.Atrial fibrillation and ventricular tachycardia are the common arrhythmias in rheumatic heart disease patients.Oral beta-blockers which are selective in nature, calcium channel blockers, amiodarone or digoxin are used to control atrial and ventricular rate and rhythm. There is no review which concluded beta blockers like propranolol''s effect on perinatal mortality and preterm birth.However there is increased evidence of neonatal bradycardia and small for gestational age infants,hypoglycemia,apnea and hyperbilirubinemia .Non-selective beta-blockers like labetalol are associated with less adverse outcomes of foetus, but they do not have proven efficacy in treating arrhythmias of heart.Hypothyroidism which is transient, goitre and mild neurodevelopmental abnormalities in the foetus or new born is seen with the use of amiodarone in pregnancy. Its only indication is maternal tachyarrhythmia refractory to other drugs which are safe.Miscarriage and fetal death incidence increases when digoxin is taken in very high doses which crosses the placenta .

The third trimester(32 week) and puerperiumhas highest risk of maternal mortality.Due to the relief of compression on inferior vena cava, autotransfusion from the uterus and continued resorption of extracellular fluid into the intravascular compartment,immediately in the post partum period,there is elevation of cardiac output as compared tovalues in antenatal period. Until the hemodynamic changes have resolved to normal in post partum period a surveillance of high level is required.An extended period of hospital monitoring is required for patients that are unstable.

Planned pregnancies are needed particularly in women with rheumatic heart disease.A contraceptive method that is reliable which does not increase the risk of thrombosis,will lead to reduction inblood loss during menstruation and inhibit ovulation is to be used by women taking anti coagulants. The factors considered in choosing the contraceptive method include the impact that an unplanned pregnancy will have, risks and benefits of each type and individual preferences.In a women with history of mechanical heart valves combined oral contraceptives are contraindicated.

## IV. Conclusion:

Early preconception evaluation and advice regarding the potential impact of pregnancy on their cardiovascular function must be received by all women with RHD of reproductive age. Management by a MDT is needed in those who chose to conceive or present after conception with emphasis on identification and avoidance of triggers of decompensation and fetal anomaly/loss throughout pregnancy andpuerperium period.

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