

Pregnancy with heart disease - fetomaternal outcome

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Abstract

Objective: To evaluate the maternal and fetal outcome of pregnancies complicated by cardiac disease in a developing country. **Method:** A prospective analysis was carried out of 30 pregnancies in women with cardiac disease who delivered at 28 weeks of gestation and beyond from April 2013 to March 2014 at Krishna institute of medical sciences, karad. **Results:** Rheumatic heart disease (n=21, 70%) with isolated mitral stenosis (n=16) was the predominant cardiac problem. Septal defects were the most common form of congenital heart disease (n=8). In 11 (36.66%) women, the diagnosis of cardiac disease was made during pregnancy. Patients in NYHA class I/II (n=21, 70%) had fewer maternal complications and their babies had a higher birth weight than those in NYHA class III/IV (n=9, 30%). Cardiac complications were noted in 4 (13.33%) patients. Commonest complication developing during pregnancy, labor and puerperium was congestive cardiac failure (n=2, 6.66%). Maternal mortality was noted in 1 patient (3.33%), which were due to cardiac failure and pulmonary edema. Six patients (20%) delivered preterm and thirteen patients (43.33%) had low birth weight babies. There were three neonatal deaths and one stillborn. **Conclusions:** Rheumatic heart disease is the predominant type. Patients in NYHA class I/II has a better maternal and fetal outcome than those in NYHA class III/IV. Surgically treated women tolerate pregnancy well. Vaginal delivery is safer and caesarean section should be reserved only for obstetric indications. Maternal and perinatal outcome can be improved by team approach at tertiary care center.

Key Word: Pregnancy, heart disease, fetomaternal outcome, Rheumatic heart disease.

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symptoms of congestive heart failure 8-10. Furthermore, many patients with valvular heart disease are first recognized during pregnancy. Pre-pregnancy intervention is of utmost importance in high-risk women who present for evaluation before a planned pregnancy 11-12. Moreover better medical management and newer surgical techniques has enabled more women with congenital heart disease to reach childbearing age. Objective of the present study was to find out pregnancy complications, mode of delivery and fetomaternal outcome in pregnancy with valvular and congenital heart diseases.

INTRODUCTION

Pregnancy in woman with heart disease increases the risk of maternal and fetal complications. About 1% of pregnant women have concomitant cardiac disease 1-4. Acute rheumatic fever and rheumatic valvular disease remain prevalent in many parts of the world, and are the most common cause of heart disease in pregnancy 5-7. This population of pregnant women with valvular heart disease represents a unique patient group with increased risk for adverse outcomes. The significant hemodynamic changes that occur during pregnancy can mimic

METHODS

This was a prospective analytical study conducted in the department of Obstetrics and Gynecology, at Krishna institute of medical college and university karad. Thirty pregnant women with various types of cardiac lesions were included in the study. Twenty two out of these thirty patients were booked cases and remaining eight cases were admitted directly in the hospital with labor pain or heart failure. Functional grading of all cases was done in antenatal and postpartum period according to the NYHA classification. Patients were referred to cardiologist after

their first visit and thereafter managed by joint supervision of obstetrician and cardiologist throughout their pregnancy. History of rheumatic fever, cardiac operations, and previous pregnancy complications was detailed. Apart from routine antenatal investigations, ECG and echocardiography were done and repeated when necessary. Patients with NYHA class I disease were admitted two weeks prior to their expected date of delivery, patients with NYHA class II disease were admitted between 32-34 weeks of gestation or earlier in presence of complication, and patients with class III and IV disease were admitted as soon as they were diagnosed. Delivery was planned accordingly and patients were kept in hospital for at least seven days postpartum or more if required. Fetal outcome was noted in terms of birth weight, maturity, Apgar score, congenital anomaly.

RESULTS

Most (70%) of the patients in this study were in the age group of 20-29 years. Eight patients had congenital heart disease, of which 6 patients had ASD, 2 patients had VSD, . Rest 21 patients (70%) had valvular heart disease, all of rheumatic origin. Isolated mitral valve involvement was found in 16 cases, and 5 cases had combined involvement of mitral and tricuspid valves. One patient with supraventricular tachycardia. Prior history of cardiac surgery was present, one for correction of ASD, and one for VSD .Both maternal and fetal outcome were better in operated cases. Majority of the patients belonged to NYHA class I 15, patients had NYHA class II 6, 7 patients had NYHA class III and 2 patients had NYHA class IV disease. Most common symptom on admission was dyspnea (20 cases). Other symptoms were cough (10cases), pedal edema (8cases), cyanosis (3 case), and palpitation (10 cases). Congestive cardiac failure

developed in 2cases. None of the patients developed bacterial endocarditis. Other complications like anemia and respiratory tract infection was present in 37.5% and 25% cases respectively. Preeclampsia developed in 7.5% patients. Most of the patients (55%) were treated with adequate rest, digoxin therapy, long acting benzathine penicillin and furosemide diuretics and endocarditis prophylaxis during labor. No patients were treated with anticoagulants or required any cardiac interventions. Sixteen patients (53.33%) delivered vaginally. Outlet forceps were given in 3 patients to cut short the second stage of labor. Rest of patients had spontaneous vaginal delivery. Lower segment caesarean sections were done in 14 cases, (9 elective and 5 emergency LSCS. Indication of elective LSCS was gross IUGR in a patient with ASD, one patient of secondary infertility with Cephalopelvic disproportion; avoid postdatism in a patient with rhesus negative pregnancy, and previous ceasarean section. Indication of emergency LSCS was fetal distress in two patients, non-progress of labor in three patients. In all cases epidural anesthesia was used except in two cases of fetal distress where general anesthesia was performed. None of the patients undergoing LSCS developed any complication. In the present study one maternal death occurred out of 30 patients (3.33%). maternal deaths occurred postnatally, 8 day after delivery due to cerebral embolism. Overall perinatal outcome was good. 100%of NYHA class I and class II patients delivered between 37-40 weeks compared to 57.1% of class III and 25% of class IV patients. 4 patients (13.3%) delivered preterm and 10 patients (33.33%) had low birth weight babies. There were two neonatal deaths and no stillborn.neonate died due to prematurity, one due to septicemia. One baby, whose mother had ASD, was diagnosed to have membranous type of VSD.

Table 1: CHD and RHD patients

Total no of Patient	Congenital Heart Disease(26.66)		Rheumatic Heart Disease (73.34)		
30	ASD	VSD	MITRAL	Mitral+ Tricuspid	Supraventricular Frachycardia
	6	2	16	5	1

Table 2: NYHA Classification

NYHA	I	II	III	IV
30	15	6	7	2

Table 3: Number of Deliveries

Total No. of Deliveries	vaginal		caesarean	
	spontaneous	instrumental	elective	emergency
30	10	6	9	5

DISCUSSION

Heart disease in pregnancy is an uncommon problem in the developed world but reaches a high prevalence in developing countries. With the advent of

more and more modern techniques and advancement in knowledge, the hemodynamic circulation in pregnancy is now better understood and managed. The availability of echocardiography provides information about disease

etiology, accurate and noninvasive assessment of severity and means of monitoring progression. Contraindications for pregnancies still remain severe pulmonary artery hypertension, Eisenmenger-syndrome and severe non corrected cyanotic disease as well 1. In developed countries, congenital heart diseases are the commonest cause of cardiopathy in pregnant women 3. However rheumatic heart disease still remains the most common cardiopathy found in pregnant woman in our country. In our prospective analytical study conducted over a period of one year, 30 cases of different types of cardiac lesions with pregnancy were included. In 70% of the patients, heart disease was of rheumatic origin and rest 30% of the patients presented with congenital heart disease. Mitral stenosis was the commonest valvulopathy (n=16). This was consistent with a previous study conducted by Doshi Hu et al where rheumatic cardiac disease (68.62%) with mitral valve involvement (88.57%) was the commonest cardiac disease in pregnancy 4. In our study, none of the patients had history of valve replacement and therefore no patients required anticoagulant therapy. This incidence was greater than that found in a previous study by Meng Y et al where ASD and VSD constituted 58% of congenital heart disease patients 5. This difference may be due overall small population of congenital heart disease patients in the present study. Cardiac complications were present in 13.33% patients (4/30). These include congestive cardiac failure (n=2, cardiarrhythmias like atrial fibrillation (n=1) and supraventricular tachycardia (n=1),.). This was similar to the findings of Doshi HU et al 4 and heart failure was more common in NYHA grade III and IV groups. Vaginal delivery occurred in 53.33% patients. Rest of the patients underwent LUCS. Indication for performing elective and emergency LUCS were mainly obstetrical. Preterm delivery occurred in 13.33% patients and all of them belonged to NYHA class III and IV group (p=.03). Average birth weight in NYHA class I and II was 2.8kg whereas average birth weight in NYHA class III and IV was 2.2kg (p=.04). In a previous study of valvular heart disease by Leśniak-Sobelga A et al 80% of all deliveries occurred by vaginally and incidence of preterm labor was 4% 6. In other studies conducted by Lin JH et al CS rate was 79% and preterm labor occurred in 35% cases of heart disease complicated by pulmonary hypertension 7 and in cases of pregnancy complicated by rheumatic heart disease, the delivery week was 34.6 and the birth weight was 2176 g averagely in NYHA class IV group and had significant differences from NYHA class I group (P < 0.05) 8. In the present study, apart from one case of VSD, no other congenital anomalies were found in the newborns. Maternal mortality occurred in 3.33% cases. This was consistent with a previous study by Naidoo DP

et al where there was high maternal mortality rate of 9.5% and rheumatic heart disease accounted for most of them.

CONCLUSION

The management of pregnant woman with heart disease requires a multidisciplinary team for optimal maternal and fetal outcome. Acute rheumatic fever and chronic rheumatic valvular disease in their most virulent form are still commonly encountered and impose a huge burden on limited healthcare resources. Mitral stenosis is the most frequently encountered rheumatic valvular lesion. The use of percutaneous mitral balloon valvuloplasty has improved the obstetric outcome of mitral stenosis in symptomatic patients. Severe aortic stenosis is associated with poor prognosis. Regurgitant valvular diseases are often well tolerated with medical therapy. A variety of pregnancy-associated cardiovascular changes often exacerbate the signs and symptoms of valvular lesions. Pregnancy should not be allowed to proceed, if possible, in patients with uncorrected severe valvular lesions, as maternal and fetal morbidity and mortality are high. For those with milder disease, pregnancy is best undertaken after the valvular lesion has been rectified or stabilized. Besides management during the antenatal period, timing and mode of delivery should be decided upon jointly by the obstetrician, cardiologist, and obstetric anesthesiologist. Pregnant women with rheumatic heart disease of moderate-severe mitral stenosis, severe pulmonary hypertension and atrial fibrillation are at high risk of heart failure. The fetal outcome is not good in cases of NYHA class III and IV. Surgically treated women tolerate pregnancy well. Vaginal delivery is safer and caesarean section should be reserved only for obstetric indications. Maternal and perinatal outcome can be improved by team approach at tertiary care center.

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