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Original Research Article

Maternal and Fetal Outcome of Pregnant Women with Cardiac Disease – A Tertiary Care Institute Experience

Dr. Anusha B.C.[1], Dr. Asha M.B.[2], Dr. Swati L. Iyengar[3], Dr. Rakshith N.[4]

[1]Senior Resident, Department of Obstetrics & Gynaecology, Mysore Medical College & Research Institute, Mysore, Karnataka, India.
[2]Assistant Professor, Department of Obstetrics & Gynaecology, Mysore Medical College & Research Institute, Mysore, Karnataka, India.
[3]Senior Resident, Department of Obstetrics & Gynaecology, Mysore Medical College & Research Institute, Mysore, Karnataka, India.
[4]Senior Resident, Department of Obstetrics & Gynaecology, Mysore Medical College & Research Institute, Mysore, Karnataka, India.

Corresponding Author
Dr. Asha M.B., Assistant Professor, Department of Obstetrics & Gynaecology, Mysore Medical College & Research Institute, Mysore, Karnataka, India.

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ABSTRACT

Background

Cardiac disease in pregnancy is still a major cause of maternal and fetal mortality. Therefore, in this study we aim to analyze the incidence of cardiac disease in pregnancy in our hospital and to assess the maternal and fetal outcome.

Methods

This was retrospective observational study conducted at Cheluvamba hospital, Mysore medical college, Mysore, in the department of Obstetrics and Gynaecology for a period of 18 months between Jan 2022 to June 2023.

Results

In the present study, incidence of cardiac disease at our centre was 0.44%. RHD was the most common heart disease in pregnancy (57.89%) followed by CHD (36. 84%) and peripartum cardiomyopathy (5.26%). Among RHD, mitral valve stenosis was most common followed by mitral stenosis with mitral regurgitation. Number of LSCS was higher compared to vaginal deliveries.Obstetric complications observed in form of anaemia, preeclampsia, and preterm labour and one maternal mortality. Perinatal morbidities observed in form of prematurity, birth asphyxia, MAS, and NICU admission.

Conclusion

It is a multidisciplinary approach by obstetrician, cardiologist, neonatologist to achieve successful pregnancy. Regular antenatal checkup and strict vigilance can avoid the complications.

Keywords: RHD, CHD, Maternal mortality.

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INTRODUCTION

Cardiac disease in pregnancy is a high-risk pregnancy which is still a major problem worldwide, particularly in developing countries. It is still a major cause of maternal mortality. In western countries about 0.2–0.4% of all pregnancies are complicated by cardiovascular disease.[1] The incidence of cardiac disease is 1–4% of pregnancies in India.[2]

Cardiac disease in pregnancy is the important indirect cause of maternal mortality globally.[3] The most common heart diseases in pregnancy are RHD and CHD while ischemic heart disease and cardiomyopathy are less common. Congenital heart disease is the most frequent cardiovascular disease present during pregnancy in developed country, while rheumatic heart disease is predominant in developing country like India. Peripartum cardiomyopathy is the frequent cause of severe complications. The most common clinical features of cardiac lesions like breathlessness, palpitations, pedal oedema, murmurs which mimic normal physiological changes in pregnancy pose a diagnostic difficulty to obstetricians. The obstetric complications like preeclampsia, anaemia, preterm labour, fetal growth restriction further worsen the outcome and complicate the management of pregnancy.

MATERIALS & METHODS

This was a retrospective study carried out at the Department of Obstetrics and Gynecology at cheluvamba hospital, Mysore medical college, Mysore during the period of Jan 2022 to June 2023, after ethical clearance from Institutional Ethical Committee. A total of -- pregnant women with cardiac disease admitted during the study period were included in the study. All the patients detailed demographic information, diagnosis, course in the hospital, management, maternal and fetal outcome was obtained from our medical records and files.

Inclusion Criteria

Pregnant women with a history of cardiac disease of or newly diagnosed cardiac disease after they presented to hospital with cardiac symptoms, evaluated clinically and then sent for necessary investigation. Those who were finally diagnosed with structural or functional cardiac disease were included in the study.

Exclusion Criteria

All condition mimicking heart disease were excluded.

Statistical Analysis

The statistical analysis was performed using Microsoft Excel®. A descriptive analysis was conducted to measure the outcomes. The data is represented in numbers and percentages.

RESULTS

Total number of deliveries during the study period was 12826. A total of 57 pregnant women with cardiac disease were included in the study. The incidence of cardiac disease at our center was 0.44%.

Variables	Number	Percentage

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Age (years)		
18-20	8	14
21-25	29	50.8
26-30	14	24.56
>30	6	10.52
Parity		
Primi	25	43.85
Multi	32	56.14

Table 1: Maternal age and parity wise distribution

Majority of patients were in the age group of 21–25 years (50.8%). Among 57 pregnant women, 56.14% were multigravida and 43.85 were belongs to primigravida.

28-32weeks	2	3.5
33-36weeks	10	17.5
37-40weeks	40	70.17
>40weeks	5	8.77

Table 2: Gestational age (at which delivery occured) wise distribution

Of 57 patients, majority were term gestation (70.17%), about 21% were pre-term and 8.77% were post-dated.

Type of Lesion		
CHD	21	36.84
RHD	33	57.89
Peripartum cardiomyopathy	3	5.26

Table 3: Prevalence of cardiac disease

Most of the patient in the study had rheumatic heart disease (57.89%), followed by congenital heart disease (36.84%) and Peripartum cardiomyopathy (5.26).

Type of lesion	**Number**	**Percentage**
CHD		
ASD	14	66.66
VSD	4	19.04
PDA	2	9.52
PAPVC	1	4.46
RHD		
MS	21	63.63
MR	5	15.15
MS+MR	6	18.18
AS	1	3.03

Table 4: Type of lesion

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In the study ASD was the commonest among the congenital heart diseases and mitral stenosis was the commonest lesion in the rheumatic heart diseases.

Among CHD 9 patients had correction of lesion

NYHA		
Class 1	32	56.14
Class 2	20	35.08
Class 3	4	7.01
Class 4	1	1.75

Table 5: NYHA classification

Most of them were in NYHA class 1. In the study it was seen that the outcome worsened as the class increased.
NYHA class 3 - two were pulmonary edema and one was cardiac failure and pulmonary HTN
NYHA class 4 was severe MR with pulmonary HTN with cardiac failure
Two cases were initially NYHA 2 later progressed to NYHA 3 as the pregnancy advances and Two were presented at NYHA 3 in the third trimester and termination of pregnancy advised
NYHA 4 was diagnosed only at advanced gestational age

Noncardiac		
Anemia	11	55
PIH	7	35
GDM	2	10
Hypothyroidism	2	10
Cardiac		
Pulmonary edema	2	10
Pulmonary HTN	3	15
Cardiac failure	2	15
Maternal mortality	1	5

Table 6: Maternal complications

The most common obstetric complications were anemia followed by PIH. Cardiac complications were seen in 7patients. The most common cardiac complications were pulmonary HTN seen in 3 patients, followed by pulmonary edema (2 patients), and cardiac failure (2 patients).

Mode of Delivery		
Normal vaginal delivery	20	35.08
Instrumental delivery	4	7.01
Cesarean section	33	57.89

Table 7: Mode of delivery

Most of them had LSCS, most common indication was previous LSCS.

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NICU Admission	20	35.9
LBW	16	28.07
Preterm	12	21.05
MAS	3	5.3
Mortality	2	3.5

Table 8: Neonatal complication

Neonatal death- one was birth asphyxia and one was very LBW with respiratory distress.

DISCUSSION

Cardiac disease is a major risk factor for maternal and perinatal morbidity and mortality. The incidence of cardiac disease in pregnancy in present study was 0.44% which was comparable to study done by Prameela PP[4]. As most of the centers in our country being a referral centers, may not reflect the actual prevalence of this medical disorders in pregnancy. In a study by Pujitha *et al*,[5] the incidence of cardiac disease in their study was 0.21%.

The predominant lesion in our study was rheumatic heart disease (57.89%), followed by congenital heart disease (36.84%) and Peripartum cardiomyopathy (5.26%). Pujitha *et al*. also found similar results in their study, RHD (62.6%) was the most common lesion in their study followed by CHD (21.8%) and peripartum cardiomyopathy (15.6%). Shaifali Patil *et al*.[6] and Sheela C N et al[7] also report RHD as the most predominant lesion in their study.

Rheumatic heart disease complicates about 0.3% to 3.5% of women in the childbearing period with a global figure of 1%.[8] Rhematic valvular diseases dominate in developing countries comprising 56-89% of all cardiac diseases in pregnancy.[9] The most common congenital heart disease seen in the study population was ASD (66.66%), VSD was seen in 4 patients. The most common lesion in patients with RHD was mitral stenosis (63.63%) followed by mitral stenosis and mitral regurgitation (18.18%) followed by mitral regurgitation. Aortic valve was involved in one patient who presented with aortic stenosis. Pujitha *et al* [5] also found mitral valve as the most common lesion in their study (56.3%) followed by aortic valve disease (6.25%). Mitral stenosis was also found to be the most common lesion in study by Shaifali Patil *et al*.[6]

Out of 57 patients 56.14% were in NYHA class 1 and 35.08% were in class 2, the complications were not severe in these patients. Among 4 (7.01%) cases who were in class 3 NYHA the complications were in form of pulmonary oedema and CHF. One patient who was in class 4, died due to severe mitral regurgitation with pulmonary hypertension. This result was comparable with Indira et al.[10]

In terms of obstetrical outcome, out of 57 patients 33 (57.89%) had LSCS (lower segment caesarean section) and rest were delivered vaginally (35.08%) instrumental application was done for 4(7.01%) deliveries. Most common cause for LSCS was repeat emergency LSCS in view of previous LSCS followed by fetal distress and malpresentation, which was comparable to study done by Nasik AS et al.[11] and Roos-Hesselink et al study.[12]

The most common obstetric complications were anemia which was seen in 11 patients followed by pre-eclampsia in 7 patients, and GDM and hypothyroidism in 2 patients. The results were comparable with study done by Dogra A *et al*.[13] and Pandey et al.[14] Commonest complication was anemia followed by pregnancy induced hypertension. Anemia increases the

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preload on the heart and worsens the cardiac status. Pregnancy induced hypertension increases the after load on the heart.

Cardiac complications were seen in 7 patients. The most common cardiac complications were pulmonary HTN seen in 3 patients, followed by pulmonary edema (2 patients), and cardiac failure (2 patients). The results were comparable to study done by Nasik AS et al.[11] and Roos-Hesselink et al study.[12] In our study, maternal mortality was seen in 1 case. One patient died due to severe mitral regurgitation, pulmonary hypertension and cardiac failure. Pujitha *et al*.[5] in their study reported one maternal death. In this study, we had 20 NICU admissions due to birth asphyxia, pre-term, and MAS. Results were comparable with Dongra A *et al*.[13] and Pujitha *et al*.[5]

CONCLUSION

Cardiac disease in pregnancy is a high-risk condition which has a major impact on pregnancy and its outcome. This study results conclude that RHD is still a predominant cardiac problem affecting pregnancy. The early detection, treatment, prevention of infections, proper follow up, and correction before pregnancy can improve the pregnancy outcome and decrease the maternal morbidity. Pre-pregnancy diagnosis, counselling, routine antenatal supervision, delivery at an Tertiary centre is of most importance to determine the favourable maternal and fetal outcome in patients with cardiac disease.

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