

Clinical study of cardiac disease complicating pregnancy

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Abstract

Objectives: To evaluate maternal and fetal outcome of pregnancies complicated by cardiac disease. **Materials And Methods:** A retrospective analysis of 61 pregnant women with cardiac disease from August 2013 – August 2014 at Cheluvamba hospital, Mysore. **Results:** In the present study, incidence of cardiac disease is 0.46%. Rheumatic heart lesions constituted 73.7% and congenital heart disease constituted 26.23%. Out of the RHD cases 51.1% of cases had involvement of single valve whereas 48.8% had multiple valves lesions. 70.49% of cases belong to NYHA grade 1, 14.75% cases were NYHA grade 3 and 1.63% belong to NYHA grade 4. Prior surgical correction was seen in 19.6% of cases. 24.59% cases were complicated by anemia and 6.55% cases complicated by PIH. 62.2% cases delivered spontaneously vaginally, 14.47% of instrumental deliveries and 21.3% cases by caesarean section. 6 cases complicated with congestive cardiac failure, acute pulmonary edema, atrial fibrillation. There were 22.9% NICU admissions with perinatal mortality of 6.5% and mean birth weight of 2.5 kg. One maternal death was seen. **Conclusion:** Heart disease in pregnancy is a high risk condition and has major impact on pregnancy. Early diagnosis by proper antenatal care and intervention could be the key to prevention of complications.

Keywords: cardiac disease, pregnancy, NYHA grade.

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INTRODUCTION

Cardiac diseases complicate 1-3% of pregnancies, the commonest being rheumatic heart disease. It is one of the 3 major indirect causes of maternal mortality in India.¹⁻² Development of obstetric complications like pre-eclampsia, anemia, preterm labour, and fetal growth restriction are commonly seen in patients with heart disease which further complicates the pregnancy³. The number of RHD is decreasing due to improved pediatric care and improved surgical intervention in childhood hence increasing number of women are reaching reproductive age due to modern therapeutic options.⁴

Pregnancy is characterised by marked increase in stroke volume and cardiac output during antepartum period. Further fluctuations occur at time of labour and after delivery. In presence of maternal heart disease the circulatory changes of pregnancy may result in decompensation or death of the mother or fetus.⁵ Hence objective of this study is to study the incidence of different cardiac lesions during pregnancy, effect of heart disease on maternal and fetal health and management methods and outcome parameters.

MATERIALS AND METHODS

It is a retrospective study for a period of one year from August 2013 to August 2014 conducted at Cheluvamba hospital, Mysore. Data were obtained from review of medical records. A total of 61 cases of cardiac disease were admitted during the study period. Baseline data like maternal age, gestational age at the time of visit, New York Heart Association (NYHA) functional class at first antenatal visit, parity status, presence of co-morbid conditions, complications during antepartum, intrapartum, and postpartum periods were recorded. Cases reporting during labour were managed as per the cardiac conditions. Patients were kept for 8-10 days after normal

delivery and were discharged with advice about contraception, breast feeding and penicillin prophylaxis.

OBSERVATIONS AND RESULTS

Incidence: Total no patients admitted for delivery during the study period were 13126. This included 61 cases of heart disease with different lesions. Thus incidence in our present study is 0.46%.

Table 1: Maternal characteristics -age wise distribution

S. No	Maternal age (yrs)	Number (%)
1	18-20	9(14.7%)
2	20-24	35(57.3%)
3	25-29	13(21.3%)
4	>30	4(6.5%)

Out of 61 patients with cardiac disease majority of patients were in age group of 20 – 24 yrs (57.3%).Out of them 49 (80.32%) were booked cases and 11(18.03%) were unbooked.

Table 2: Parity wise distribution

S.no	Parity	Number (%)
1	G1	30(49.1%)
2	G2	22(3.66%)
3	G3	6(9.83%)
4	G4 & above	3(4.91%)

Among the 61 women 49.1% were primigravida, 3.66% were second gravida, 9.83% were third gravida, 4.91% were G4 and above.

Table 3: Gestational age wise distribution

S.no	Gestational age	Number (%)
1	28-32 weeks	2(3.33%)
2	33-36 weeks	7(11.6%)
3	37-40weeks	49(81.6%)
4	>40weeks	2(3.33%)

Out of 61 women many of them belonged to term gestation (81.6%), and 14.9% of them were preterm gestation.

Table 4: NYHA Classification

S.no	NYHA Grade	NUMBER (%)
1	NYHA 1	43(70.49%)
2	NYHA2	8(13.11%)
3	NYHA 3	9(14.75%)
4	NYHA4	1(1.63%)

Most of them were in NYHA class (70.49%). In the study it was seen that the outcome worsened as the class of the disease increased.

Table 5: Prevalence of cardiac disease

S.No	Type of cardaic disease	Number (%)
1	Congenital heart disease	16(26.23%)
2	Rheumatic heart disease	45(73.7%)

Most of the caridac lesion belonged to rheumatic heart disease in our study (73.7%)

Table 6: CHD

S.NO	Type of CHD	Number (%)
1	ASD	7(43.7%)
2	VSD	2(12.5%)
3	MVP	5(32.2%)
4	BISUCPID AV	2(12.5%)

Out of the congenital heart lesions most of them were ASD.

Table 7: RHD single valve lesions (51.1%)

S.No	Type of lesion	Number (%)
1	MS	11(65.2%)
2	MR	4(26.08%)
3	TR	1(0.4%)
4	AS	1(0.4%)

Out of RHD most of them belonged to MS.

Table 8: RHD multiple valve lesions

Type of lesion	Numeber(%)
MS+MR	9(40.9%)
MS+AR	4(18.18%)
MS+MR+PAH	3(13.6%)
TR+MR+PAH	2(0.9%)
MS+MR+AR	2(1.3%)

Table 9: Time of diagnosis

Time of diagnosis	Number (%)
before pregnancy	41(67.19%)
1st trimester	8(13.19%)
2nd trimester	4(6.55%)
3rd trimester	3(4.91%)
during labour	5(8.19%)

Most of the cases were diagnosed before pregnancy,67.19%. 8.19% of cases were diagnosed during labour.

Table 10: Comorbid conditions

Co morbid conditions	Number (%)
PIH	4(6.55%)
Anemia	15(24.59%)
Hypothyroidism	3(4.91%)
Epilepsy	2 (3.27%)

Majority of cases were associated with anemia (24.59%). 6.55% of cases were associated with PIH.

Table 11: Complications

Cardiac complications	Antepartum	Intrapartum	Postpartum
Congestive cardiac failure	1	1	1
Acute pulmonary edema	1		
Atrial fibrillation	1		
Death			1

Table 12: Mode of Delivery

Mode of delivery	Number (%)
vaginal delivery	38(62.2%)
instrumental delivery	9(14.47%)
LSCS	13(21.3%)

Most of them had spontaneous vaginal delivery 62.2%. LSCS were done for obstetric indications only.

Table 13: Birth weight

Birth weight	Number (%)
<2kg	3(4.9%)
2-2.4kg	24(39.3%)
2.5-2.9kg	18(29.2%)
3-3.5kg	10(16.3%)
>3.5kg	2(3.2%)

Table 14: Neonatal outcome 14 NICU admissions

Complications	Number
SGA	3
Prematurity	3
APGAR<7	2
Meconium aspiration syndrome	2
IUGR	2
PNM	4 (2 IUD)

DISCUSSION

The incidence of the present study has been 0.46%. In a study done by Sheela *et al.*, the incidence is 1%.⁵ Most of them belonged to low socioeconomic status (96.4%). Most of them were primigravida (49.1%) & 80.32% of them were booked cases. RHD were 73.7% and most of them involved mitral valve. The results were comparable with studies done by Sheela *et al.* (67%) and Nina *et al.* (80%).^{5,6} Most of them were NYHA grade 1.(70.49%) and NYHA grade 4 were 1.63%.^{5,6} There were 12 cases who underwent surgical correction before pregnancy. out of them 3 patients underwent mitral valve replacement, 5 patients underwent PTMC and 4 cases underwent ASD closure as comparable with study by Bhatla *et al.*⁷ Most of them had spontaneous normal delivery 62.2%. Instrumental delivery was applied in 14.47% of cases.⁸ 13 patients underwent LSCS for obstetric indication. Most common indication was fetal distress. 14 NICU admissions. 4 perinatal mortality were seen cause of death being prematurity and respiratory distress syndrome and HIE stage 3 and 2 were IUD as comparable with Hanania *et al.* and Suri *et al.*^{9,10} Commonest complaint was dyspnoea on exertion(31.1%) followed by fatigue (27.8%).CCF was observed in 3 cases. Acute pulmonary edema was seen in 2 cases.1 case of maternal mortality was seen.

Cause of death: severe mitral stenosis with severe anemia with Atrial fibrillation in failure. The case was unbooked and came in labour which could have been prevented by early detection and timely surgical intervention. This suggests lack of awareness among the community about the heart disease and its complications. Similar findings were in studies done by Ashwini *et al.*¹¹

CONCLUSION

Heart disease complicating pregnancy is a high risk situation and demands special attention throughout pregnancy. An expert supervision and management by the obstetrician along with physician and fullest cooperation by the patient throughout antenatal, intranatal and postnatal period achieves optimum maternal and perinatal outcome.

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