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Epidemiology and maternal and fetal outcome of heart disease during pregnancy: A tertiary care center experience

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Abstract

Background: Cardiac disease is one of the important causes of maternal mortality and morbidity both in antepartum and postpartum period. The overall incidence of heart disease in pregnancy is <1%. In developing countries rheumatic heart disease is the commonest type of heart disease, whereas cardiomyopathies and congenital heart disease are more common in developed countries.

Method: A retrospective study was conducted in the department of Obstetrics and Gynecology at Indira Gandhi Institute of Medical Sciences, Patna, Bihar. An analysis of the records of all the patients of heart disease with pregnancy who came to the hospital from July 2015 to July 2018 was done.

Objective: To find out type of heart disease in pregnancy, its etiology, and types of valvular lesions as well as to assess maternal and fetal outcomes in heart disease patients.

Result: A total of 41 pregnant women with heart disease were admitted at the hospital over three years duration. The mean age of women having heart disease with pregnancy was 25.39 years. Rheumatic heart disease (RHD) was present in 85.3%, congenital heart disease (CHD) in 12.1% and pripartum cardiomyopathy in 2.4%. Mitral stenosis (MS) was the commonest valvular lesion present in 75.6% of cases. 81% of the female were having NYHA grading I/II. LSCS was done in 78% cases. There was only 2 cases of maternal mortality. Perinatal outcome was good with 97.4% live birth rate.

Conclusion: Heart disease complicating pregnancy is a high risk condition and requires a multidisciplinary approach to improve maternal and perinatal mortality.

Keywords: Rheumatic heart disease, congenital heart disease, mitral stenosis, LSCS

Introduction

Cardiac disease is one of the important causes of maternal mortality and morbidity both in antepartum and postpartum period. The overall incidence of heart disease in pregnancy is <1%^[1]. Pregnancy makes a significant demand on the cardiovascular system. The circulatory changes of pregnancy in the presence of maternal heart disease may result in adverse consequences, even death of the mother or fetus^[2]. About 15-52% of cardiac abnormalities is first diagnosed during routine antenatal examination or because of symptoms brought about by the physiological changes of pregnancy^[3]. Cardiac disease in the pregnant woman can present a challenge to the obstetrician, cardiologist, anesthesiologist and neonatologist. Cardiac disease in pregnancy is broadly divided into congenital and acquired. The acquired group includes RHD, cardiomyopathies and ischemic heart disease. The spectrum of cardiovascular disease is changing and varies between countries^[4]. In developing countries rheumatic heart disease is the commonest type, whereas cardiomyopathies and congenital heart disease are more common in developed countries. The presence of maternal heart disease affects the fetus in a number of ways. The risk of abortion whether spontaneous or therapeutic increases in women with heart disease^[2]. Some medications used in treatment of heart disease like ACE inhibitors also affect the fetus. The children borne from the mother with congenital heart disease are at increased risk for congenital heart disease. Heart disease in pregnancy increases the maternal mortality^[5].

Method

This was a retrospective study which was conducted in the department of Obstetrics and Gynecology at Indira Gandhi Institute of Medical Sciences, Patna, Bihar. An analysis of the records of all the patients of heart disease with pregnancy who came to the hospital from July 2015 to July 2018 was done and information gathered were entered on a structured proforma

after getting clearance from institute ethical committee. The aims and objectives of the study were to find out type of heart disease in pregnancy, its etiology, and types of valvular lesions as well as to assess maternal and fetal outcomes in heart disease patients.

Results

A total of 41 pregnant women with heart disease were admitted at the hospital over three years duration. The mean age of women having heart disease with pregnancy was 25.39 years.

Table 1: Age distribution of patients

Age(years)	No. of patients	%
<20	02	4.8
20-25	21	51.2
26-30	12	29.2
30-35	05	12.1
>35	01	2.4

In the study 33 (80.4%) of the patients were primigravida while only 8 patients were multigravida. Out of 41 women 25(60.9%) belonged to rural area whereas 16(39.02%) were from urban population.

Rheumatic heart disease was the main cause of heart disease among the pregnant female. Table 2 depicts the distribution of heart disease in pregnancy in current study.

Table 2: Distribution of type of heart disease

Heart disease	No. of patients	%
Rheumatic heart disease	35	85.3
Congenital heart disease	05	12.1
Peripartum cardiomyopathy	01	2.4

Among the 5 pregnant female with congenital heart disease there was one patient each of Ebstein’s anomaly, Tetralogy of Fallot, Pulmonary stenosis, Eisenmenger’s syndrome and atrial septal defect (ostium secundum).

Table 3: Type of valvular lesion in Rheumatic heart disease

RHD valvular lesion	No. of patients(35)	%
Mitral stenosis	07	20.0
Mitral stenosis+ mitral regurgitation	16	45.7
Mitral stenosis+ atrial stenosis+ atrial regurgitation	04	11.4
Mitral stenosis+ atrial stenosis	02	5.71
Mitral regurgitation	03	8.57
Mitral stenosis+ tricuspid regurgitation	02	5.71
Atrial stenosis+ atrial regurgitation	01	2.85

In rheumatic heart disease patients single valve involvement was seen in only 28.5% whereas 71.4% were having multiple valvular involvements. Out of 41 patients only 2 had undergone corrective cardiac surgery during pregnancy.

Figure 1 depicts functional NYHA grading of pregnant patients with heart disease at the time of admission.

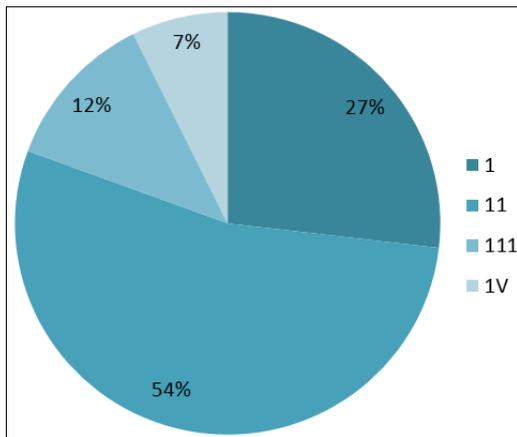


Fig 1: NYHA grading

Majority (78.0%) of the women with heart disease underwent lower segment caesarean segment while only 17.0% had vaginal delivery. Among vaginal delivery 5 was spontaneous in onset and only 2 was induced labour.

Table 4: Maternal outcome of pregnancy

Pregnancy outcome	No. of patients	%
LSCS	32	78.0
Vaginal delivery	7	17.0
Termination of pregnancy	2	4.87

Maternal complications of heart disease during pregnancy were seen in 8 patients out of 41. Congestive cardiac failure was present in 6 whereas there were 2 cases of maternal mortality total accounting to 8 cases of complications. The two cases of mortality was a case of Ebstein’s anomaly and Eisenmenger’s syndrome.

Table 5: Perinatal outcome in pregnancy with heart disease

Perinatal outcome	No. of patients	%
Live birth	38	97.4
Still birth	1	2.56
Preterm	11	28.2
IUGR	3	7.69
NICU admission	6	15.3

Out of total 39 deliveries there was only 1 case of stillbirth. No obvious congenital heart disease was present in any baby of mother with heart disease.

Discussion

In this retrospective study three years of hospital records of patients of pregnancy with heart disease admitted in the hospital was evaluated. Total of 41 patients’ record with heart disease was found. Majority of the women (51.2%) in the present study belonged to 20-25 years which is similar to study done by I Indira *et al* in which 50% of women were of 20-25years of age [6]. In the current study 80.4% of pregnant women suffering from heart disease were primigravida which is similar to study conducted by Salam S *et al* in which 60% were primigravida [7]. A study done by Vidyadhar *et al.* also 70% patients were primigravida [8].

In the present study RHD was the main cause of heart disease in pregnancy present in 85.3% of case. These results were in consensus with the study conducted by I Indira *et al* and Mazhar SB *et al.* [9] This is in contrast to affluent societies in which

congenital heart lesions are the dominant anatomical lesions in patients presenting with cardiac disease in pregnancy^[10]. In this study 60.9% were having multiple valvular involvements which is similar to the study of I Indira *et al.*^[6] Mitral stenosis was the commonest lesion in present study this was in agreement with the study conducted by Bhatla *et al.*^[11] Majority of the women were NYHA I/II in the study which is similar to the study of P Sneha *et al.*^[12] and I Indira *et al.*^[6]

In this study in 78% of women with heart disease the mode of delivery was by LSCS whereas 76% had LSCS in the study of Alireza *et al.*^[13]. Mortality in pregnancy with heart disease is mainly due to pulmonary edema and heart failure. In current study the mortality was 4.8% which was comparable to Hameed *et al.*^[14] Salam S *et al.*^[7] and Verena *et al.*^[15]

38(97.4%) live birth was observed in the present study which was similar to that observed in Salam S *et al.*^[7] IUGR was present in 7.69% cases which was compared to the study of Pratibha D *et al.*^[16]

Conclusion

Heart disease complicating pregnancy is a high risk condition with increased risk of morbidity and mortality affecting both the mother and the fetus. A multidisciplinary approach is required to deal the condition. Proper evaluation of the condition and delivery at equipped center can improve both maternal and fetal outcome.

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