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Original Research Article

Study of outcome of pregnancy in women with heart disease

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ABSTRACT

Background: Heart disease complicates 1% of all pregnancies. Objective of the study is to evaluate the maternal and fetal outcome in patients with cardiac disease in pregnancy.

Methods: An observational study was carried out in 25 pregnant women with known or newly diagnosed heart disease at tertiary care hospital.

Results: The average age of women was 21-25 (36%), in which primigravida 52% and 48% were multigravida. 56% patients were unbooked and 44% booked. Rheumatic heart disease was the commonest aetiology and was found in 56% of patients. While 16% patients had RHD with PAH. Three (12%) patient had prosthetic valve replacement. 8% patient had Congenital heart disease while 8% had peripartum cardiomyopathy. 60% delivered vaginally and 40% of them had delivered by LSCS for various obstetrical indications. In our study none of the patient required therapeutic termination of pregnancy. Majority of patients 92% in our study group had no obstetric maternal complications. Two (8%) maternal mortality occurred in our study. Low birth weight babies were 24%, preterm labour in 4% patient. 8% babies were growth restricted. Regarding fetal outcome 25 were live birth babies. None of the patient had congenitally malformed baby and there was no perinatal loss in this study.

Conclusions: Early diagnosis of heart disease, regular antenatal checkups, institutional delivery and collaboration between cardiologist and obstetrician should result in a fall in maternal deaths from conditions already diagnosed before pregnancy.

Keywords: Cardiac disease, Maternal deaths, Pregnancy, Rheumatic heart disease

INTRODUCTION

Cardiac disease is an important cause of maternal mortality and morbidity, both in the antepartum and postpartum period. At present cardiac disease complicates 0.2-0.4% of all pregnancies in western countries.¹ In developing countries like India, cardiac diseases complicate 2% of pregnancies and contribute to about one-fifth of all maternal deaths.² In the western world, the incidence of cardiac disease during pregnancy has remained stable for many years since the significant decrease in the occurrence of rheumatic heart disease in

last 40 yrs is being compensated by an increase of pregnancy in women with congenital heart disease. Congenital heart disease is the most frequent cardiovascular disease present during pregnancy (75-82%) in the industrialized world, with shunt lesions being predominant (20-65%).³ Rheumatic valvular heart disease is most common cause in developing countries, comprising 56-89% of all cardiovascular diseases in pregnancy.^{2,3} Cardiomyopathy is uncommon, but represents severe cause of cardiovascular complications in pregnancy. Peripartum cardiomyopathy is the most frequent cause of severe complications.⁴ Maternal heart

disease is now the major cause of maternal deaths during pregnancy.⁵

Cardiac disease during pregnancy is a challenge to obstetrician as common clinical features of cardiac lesion like breathlessness, pedal edema and murmur mimic normal pregnancy posing a diagnostic difficulty. Cardiac output increases by 30-50% during pregnancy and further increase during labour and delivery imposes a burden on diseased heart leading to complications and death.⁶⁻⁹ The marked pregnancy induced anatomical and functional changes in cardiac physiology can have a profound effect on underlying heart disease. Women with underlying cardiac disease may not always accommodate these changes, and ventricular dysfunction leads to cardiogenic heart failure. In most, however, heart failure develops peripartum when labor, delivery, and a number of common obstetrical conditions add undue cardiac burden. Some of these include preeclampsia, haemorrhage and anemia and sepsis syndrome.

In developing countries, the survival of newborns affected by congenital heart disease is about 85%, in many cases as a result of complex surgical procedures performed in the first few months of birth. As a consequence, cardiologists and obstetricians are now facing an increasingly large group of pregnant women with surgically corrected congenital abnormalities.

Development of obstetric complications like anaemia, preeclampsia, preterm labour, fetal growth restriction are commonly seen in patients with heart disease that further worsens the outcome and complicate the management. It is essential to thoroughly evaluate the patients of underlying cardiovascular disease in order to promote optimal care during pregnancy that plays a major role in outcome. The objective of the study is to evaluate the maternal and fetal outcome in patients with cardiac disease in pregnancy.

METHODS

An observational study is conducted in Department of Obstetrics and Gynecology of Dr. S.N. Medical college, Jodhpur, India. 25 Pregnant women with history of cardiac disease or newly diagnosed heart disease for the first time in pregnancy admitted to obstetric ward, were included in the study.

Cases were referred to medical specialist for confirmation of cardiac disease and to seek their opinion regarding management. Cases directly reporting to labor room were also included in the study. Detailed history in regard to cardiac lesion was asked. Detailed obstetric history was also gathered to know the effect of cardiac disease on pregnancy and vice versa.

Thorough clinical examination was done to find out the type of cardiac lesion, any signs of failure and stage of pregnancy. The case was then investigated with specific

investigations to confirm the cardiac lesion and the cardiac functional status. Cases were graded as per NYHA classification of grade of heart disease. Patients were advised to have regular antenatal check-up. They were told about the importance of rest, medication and regular visits. The data were obtained from review of medical records. Baseline data recorded including age, parity, type of lesion, New York Heart Association (NYHA) functional class, maternal complications, mode of delivery and indication of caesarean section, neonatal outcome and admission to NICU were noted. Patients were discharged after 7 days with proper postnatal advice.

RESULTS

A total of 25 pregnant women with cardiac disease were included in the study.

Table 1: Age wise distribution.

Age	n	Percentage
15-20	7	28
21-25	9	36
26-30	7	28
31-35	2	8
36-40	0	0
>40	0	0

The average age of women was out of 25 women 21-25 (36%) in which primigravida 13 (52%) and 12 (48%) were multigravida. Regarding antenatal care 14 (56%) patients were unbooked and 11 (44%) patients were booked.

Table 2: Type of booking.

	Number	Percentage
Booked	11	44
Unbooked	14	56

Among women with acquired heart disease, rheumatic heart disease was the commonest aetiology and was found in 14 (56%) of patients. While 4 (16%) patients had RHD with PAH. Three (12%) patient had prosthetic valve replacement. Two (8%) patient had Congenital heart disease while 2 (8%) had peripartum cardiomyopathy.

Table 3: Obstetric history.

	Number	Percentage
Primigravida	13	52
Multigravida	12	48

Out of 25 patients 15 (60%) delivered vaginally and 10 (40%) of them had delivered by LSCS for various obstetrical indications. In present study none of the patient required therapeutic termination of pregnancy.

Majority of women in study were given antibiotics prophylaxis for bacterial endocarditis.

Table 4: NYHA class.

	Number	Percentage
NYHA class I	11	44
NYHA class II	6	24
NYHA class III	8	32
NYHA class IV	0	0

Majority of 23 (92%) patient in present study group had no obstetric maternal complications. Two (8%) maternal mortality occurred in our study. In our study majority of patient 11 (44%) were in NYHA class I, 6 (24%) were in NYHA class II and 8 (32%) were in NYHA class III.

Table 5: Type of cardiac lesion.

	Number	Percentage
Rheumatic heart disease	14	56
Prosthetic valve replacement	3	12
Peripartum cardiomyopathy	2	8
Congenital heart disease	2	8
RHD with PAH	4	16

Table 6: Mode of delivery.

	Number	Percentage
Vaginal delivery	15	60
Caesarean section	10	40

Regarding perinatal outcome, low birth weight babies numbered 6 (24%), preterm labour was seen in 1 (4%) patient and had very low birth weight baby. 2 (8%) babies were growth restricted.

Table 7: Maternal outcome.

	Number	Percentage
Maternal mortality	2	0.08
No maternal complications	23	92

Regarding fetal outcome 25 (24 babies were delivered at term between 37-42 weeks gestation) were live birth babies. None of the patient had congenitally malformed baby and there was no perinatal loss in this study.

Table 8: Perinatal outcome.

	Number	Percentage
Live births	25	100
Baby well (>2.5 kg)	21	84
Low birth weight (<2.5kg)	6	24
Very low birth weight	1	4
IUGR	2	8
Perinatal loss (IUD/still birth)	0	0
Congenital anomalies	0	0

DISCUSSION

Maternal heart disease is one of the most important cause of maternal death. In the developing countries, rheumatic heart disease remains the major cause of maternal heart disease while in developed countries maternal congenital heart disease has become more prevalent due to improved survival of children with congenital heart disease.¹⁰

In present study rheumatic heart disease is the commonest etiology and is found in 56% of cases, which was comparable to other studies and confirms that rheumatic heart disease is still predominant in developing countries like India. In this study, the commonest age group to which the patient belonged to was 21 to 25 years. The majority of the patients 52% were primigravidae. In present study, 44% were booked and 56 % were unbooked.

Functional class has a direct bearing on both the maternal and fetal outcome. 44% of patients in this study were in NYHA class I, 24% in class II and 32% in class III, which is comparable to 55% in class-I and 20% in class III in a series by Yasmeen N and 22.3% in a series by Shawney, 70.9% in class I and 14.55% in class II in a study by Koregal et al and 73.42% in class I and II and 21.21% in class III in a study by Khursheed.¹¹⁻¹⁴

In present study, 60% of patients were delivered vaginally as compared to 62.5% in Yasmeen N, 92% Shawney, 86% in Asghar F, 91.42% Hameed, and 72.8% by Koregal studies.^{11-13,15,16} 40% of patients were delivered by caesarean section performed for obstetric indications. Percentage of caesarean section is comparable to 35% in a study carried out by Naila Yasmeen, 27.2% in study by Koregal and 26.5% in a study carried out by Asghar F and.^{11,13,15}

Maternal death was occurred only in 8% of cases, this is in the agreement with the result 2.5% by Yasmeen N, 2% by Sawhney et al and 3.6% by Koregal et al.¹¹⁻¹³ Low percentage of maternal complications in present study was due to multidisciplinary approach involving cardiologist, physician, obstetrician and anaesthetist.

Similarly, because of improved perinatal care 100% cases delivered live born in current study. In Present study intrauterine growth restriction was seen in 8% compared to 18.20% and 21%.^{12,16} The low birth rate was 24% in our series compared to 29.4% in Barbosa's study.¹⁷

Preterm labour was seen in 4% cases in present study. There was a significant difference in perinatal outcomes between NYHA class I, II, III, IV in current study. The perinatal mortality rate was nil in present study. In view of the high risk of low birth weight, preterm delivery and IUGR, antenatal fetal surveillance become mandatory and should be offered to these women with rheumatic heart disease and with other cardiac disease.

CONCLUSION

The population of pregnant women with heart disease has changed in recent decades, cardiologists and obstetricians need to be able to manage safely the majority of women who can tolerate a pregnancy and be able to recognise those few in whom a pregnancy is very high risk. Collaboration between cardiologist and obstetrician should result in a fall in maternal deaths from conditions already diagnosed before pregnancy.

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