

Original Research Article

A HOSPITAL BASED PROSPECTIVE STUDY TO ASSESS THE INCIDENCE OF CARDIAC DISEASE IN PREGNANCY AND ITS FACTORS AFFECTING THE MATERNAL AND NEONATAL OUTCOME IN SUCH PREGNANCIES

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ABSTRACT

Background: Pregnancy poses a significant impact on the cardiovascular system. Heart disease complicating pregnancy is an indirect cause of maternal morbidity and mortality. Every effort should be made to improve the maternal and neonatal condition in such a pregnancy. The aim of this study to assess the incidence of cardiac disease in pregnancy and the factors affecting the maternal and neonatal outcomes in such pregnancies.

Materials & Methods: It is an observational study of the pregnancies with cardiac disease reported at Government medical college and Hospital, Pali, Rajasthan, India during one-year period. We included 50 antenatal mothers with heart disease and analysed the data using percentage analysis through excel software. Detailed history, clinical findings and examination were done in all patients.

Results: the incidence of cardiac disease in pregnancy reported at the institution was 0.72%. The most predominant cardiac condition among the patients was Rheumatic heart disease (42%). Maternal mortality rate was 2%. Neonatal morbidity was mainly due to preterm delivery, low birth weight and birth asphyxia.

Conclusion: In this study it was concluded that cardiac disease in pregnancy can adversely affect the maternal and foetal outcomes if not properly managed. Management should be a multidisciplinary approach and appropriate and timely referral to a higher centre can help improve the outcomes in such pregnancies.

Keywords: Maternal Outcome, Neonatal outcome, Cardiac Disease, Multidisciplinary approach.

INTRODUCTION

Heart disease in pregnancy is one among the major medical problems complicating pregnancy. Heart disease is the third most common cause of maternal mortality, the other two being obstetric hemorrhage and pre-eclampsia. Incidence of pregnancy in women with heart disease is increasing in recent times and is a major cause of maternal morbidity and mortality. Pregnancy makes a significant impact on the cardiovascular system. Incidence of cardiac disease in pregnancy in India is 1-4%.^[1] Heart disease complicating pregnancy is an important indirect cause of maternal morbidity and morbidity.

Despite the improvement in antibiotic, diuretics, technique of anesthesia, surgery, intensive care facilities, and pregnancy with heart disease is one of the most important cause of maternal mortality in developing countries. Maternal functional status is a most important predictor of outcome and most often defined by NYHA functional class. Pregnant women with cardiac condition can be divided into 2 categories- those diagnosed with cardiac condition and under treatment before pregnancy and those as newly diagnosed or undiagnosed case during the pregnancy. To ensure safe maternal and foetal outcomes needs the joint efforts of the obstetrician, neonatologist, cardiologist and the anesthetist.^[1]

The physiological adaptation of pregnancy predisposes cardiac patient to decompensate. The risk is determined by their ability to adapt to the various physiological changes. Classic symptoms of heart disease mimic common symptoms of late pregnancy. It has now become easy to identify these cardiac conditions due to improved health facilities. If diagnosed early, and managed properly with multidisciplinary approach it results in successful outcome for mother and child in majority of cases.^[2] Pregnancies affected by cardiac issues have varying rates of maternal and neonatal mortality and morbidity, depending on the nature of the illness, the patient's functional level, and the associated complications.^[3,4] The aim of this study to assess the incidence of cardiac disease in pregnancy and its factors affecting the maternal and neonatal outcome in such pregnancies at tertiary care centre.

MATERIALS AND METHODS

This is a prospective study done on all pregnant women with either congenital or acquired heart disease attending the antenatal clinic of Government Medical college and Hospital, Pali, Rajasthan, India during the one-year study period based on inclusion and exclusion criteria were included in the study. We included 50 antenatal mothers with heart disease and analysed the data using percentage analysis through excel software. Detailed history, clinical findings and examination were done in all patients.

Exclusion criteria:

1. Pre-existing medical or surgical disorders.
2. Co-existing Obstetric disorders like Gestational Diabetes mellitus, Hypertensive disorders in pregnancy, etc.
3. Women for termination of pregnancy.
4. Women lost to follow-up.

RESULTS

The incidence of cardiac disease in our hospital was observed to be 0.72% is that period. The mean age of

the patients was 28.36 years with a standard deviation of 4.68. Among the 50 pregnant women, 56% of cases with cardiac disease were 2nd gravida or more whereas the incidence was 44% in primigravidas (table 1).

Majority of cases in this study were unbooked and was the first visit in our hospital (62%). 38% cases were booked at our hospital who developed complications of cardiac disease. More than 50% of the cases were diagnosed before pregnancy (table 1). Maximum patients belonged to NYHA class I while 6% of patients came with severe symptoms and were classified as NYHA class IV (table 1).

Majority of patients were cases of rheumatic heart disease (42%) whereas 36% of women had congenital heart lesions. 22% had other cardiac conditions like peripartum cardiomyopathy, IHD (table 1).

56% of patients underwent LSCS of which only one case was an elective LSCS. Amongst vaginal delivery 32% underwent instrumental delivery particularly vacuum assisted vaginal

Delivery (table 1).

The mean gestational age at delivery was 37.54 weeks with a SD of 2.48. Majority of the patients delivered at term (68%) (table 1).

Of the 50 cases studied 26% of patients required SICU admission and close monitoring. 74% patients could be monitored in the labour room. There was only 1 maternal mortality. The duration of hospital stay was more amongst those who were admitted in SICU (table 2).

Our study showed that 34% of the neonates required NICU admission due to various reasons of which more common was low birth weight and preterm care while 66% of neonates were given mother side. Perinatal outcome of the study was that 87.1% of the babies did well and well healthy at the time of discharge. There were no still births. The incidence of neonatal death was 12% due to various reasons. (table 3).

Table 1: Clinical characteristics of pregnant women

Variables	No. of patients	Percentage
Mean Age (yrs) (mean±SD)	28.36±4.68	
Obstetric score		
Primigravida	23	46%
Multigravida	27	54%
Booking status		
Booked	19	38%
Un-booked	31	62%
Time of diagnosis		
Before pregnancy	27	54%
After Pregnancy	23	46%
NYHA class		
Class I	29	58%
Class II	8	16%
Class III	10	20%
Class IV	3	6%
Cardiac lesions		
Rheumatic heart disease	21	42%
Congenital heart disease	18	36%
Others	11	22%

Mode of delivery		
Vaginal delivery	6	12%
LSCS	28	56%
Vacuum VD	16	32%
Gestational age (weeks) (Mean±SD)	37.54±2.48	

Table 2: Maternal outcome wise distribution of patients

Maternal outcome	No. of patients	Percentage
SICU Stay		
No	37	54%
Yes	13	26%
Mortality		
No	49	98%
Yes	1	2%

Table 3: Neonatal outcome wise distribution of patients

Neonatal outcome	No. of patients	Percentage
NICU Stay		
No	33	66%
Yes	17	34%
Mortality		
No	44	88%
Yes	6	12%

DISCUSSION

In developed countries, congenital heart disease is now more common in the pregnant population than acquired heart disease. But in developing countries like India acquired heart disease (rheumatic etiology) is the most common cause. With the use of antibiotics against streptococcus the incidence of rheumatic heart disease is decreasing. The rates of maternal death related to structural congenital heart disease have declined progressively, suggesting that the level of awareness may have increased and, thus, may have led to improved management of pregnant women with various congenital heart defects.^[5,6]

The incidence of heart disease in pregnancy in our hospital was found to be 0.72%. In the study done by Kiran Pandey et al the incidence of cardiac disease in pregnancy was found to be 0.8%.^[7] The case study shows a higher incidence of cardiac disease in multigravidas (54%) and most of them i.e 62% had their first visit to our hospital. This shows that booking status at a tertiary care hospital can decrease the incidence of the associated complications. This was contrary to the study done by Saima et al wherein most of them were primigravida (60%) and booked.^[8] Majority of the patients belonged to NYHA class I. Similar results were seen in other studies.^[7,9]

Most of the women underwent caesarean section (56%) of which 5 of them underwent elective caesarean section and the remaining emergency. Among the 13 who needed treatment in SICU and prolonged hospital stay there was one maternal mortality who had presented with NYHA class IV and was diagnosed to have peripartum cardiomyopathy. All patients who required intensive care unit admission were un-booked patients. Thus, the rate of complications could have been reduced by regular antenatal check-ups and timely detection of the condition. A Study conducted by Claartje M. Huisman et al in the Netherlands showed that

incidence of severe maternal morbidity due to cardiovascular disease was 2.3 per 10,000 deliveries and high case fatality rate of 13%. Cardiovascular complications developed mostly in women not known with cardiac disease pre-pregnancy.^[10]

CONCLUSION

Cardiac disease in pregnancy is a high-risk condition which can have an adverse effect on maternal and foetal outcome if not managed properly. We concluded that the prognosis of such pregnancies has improved leading frequently to successful outcomes. The management of such women should be a multidisciplinary approach involving the obstetrician, cardiologist and the anaesthetist for successful maternal and foetal outcome. Proper evaluation prior to conception, counselling, proper antenatal follow-ups and supervision, appropriate referral and management of delivery at a well-equipped tertiary centre can lead to better outcome in such pregnancies.

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