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Pregnancy Outcomes in Women with Heart Disease at Tertiary Care Hospital Northern Western Rajasthan.

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Abstract

Background: Pregnancy makes a significant demand on the cardiovascular system. 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.

Methods: A total of 50 pregnancies complicated by heart disease were evaluated retrospectively. The antenatal follow-up records and medical records of both the mothers and newborns were investigated.

Result: 50% pregnant women were between 20-25 Yrs age group. 76% pregnant women were house wife. 54 % women were multipara and 46% were primi. 52% pregnant women availed hospital services during antenatal period. The distribution of the patients according to the New York Heart Association functional classification were determined to be 62%, 30% and 8.00% in NYHA stage I, II and III–IV, respectively. The mean gestational week at delivery was 37.02 ± 4.2 Weeks and mean birth weight was 3140 ± 824 gram. There was no maternal mortality encountered, whereas perinatal mortality was observed in two cases.

Conclusion: During pregnancy by observing full time the incidence of heart disease complication could be reduced.

Keywords: Cardiac disorders, Pregnancy, Maternal morbidity.

Introduction

Pregnancy makes a significant demand on the cardiovascular system. About 15-52% of cardiac abnormalities are first diagnosed during routine antenatal examination or because of symptoms brought about by the physiological changes of pregnancy[1]. Cardiac disease in the pregnant woman can present a challenge to the obstetrician, cardiologist and neonatologist. The spectrum of cardiovascular disease is changing and varies between countries. At present 0.2 - 4% of all pregnancies in western countries are complicated by cardiovascular disease. In the developed countries, because of a marked decline in the incidence of rheumatic heart disease, congenital heart disease accounts for most of the cardiac disease in pregnancy. Surgical correction of congenital heart disease has enabled many women to reach the child bearing age in western countries[2]. Maternal functional status is a most important predictor of outcome and most often defined by NYHA functional class. Poor functional status and cyanosis are mostly associated with adverse maternal and neonatal outcome. Gestational diabetes, preeclampsia, preterm birth and small for gestational age babies are the major risk factors for maternal heart disease. In under developed countries, anemia is a major associated factor that precipitates heart failure. In the developed countries, as other causes of maternal deaths have shown a decline, heart disease complicating

pregnancy has become an important cause of maternal mortality[3,4].

The advancements in cardiology and obstetrics have provided major improvements in the management of pregnant patients with cardiac disorders and many patients do not experience any problems during their pregnancy. However, even if the most advanced treatment options are used, it must be remembered that the physiological changes during pregnancy constitute a heavy burden for the pregnant patients with heart disease. These patients must be managed in a multidisciplinary approach, with the collaboration of an obstetrician and a cardiology consultant. Furthermore, this management must commence before conception, the family should be counseled about the possible risks and finally optimal conditions must be maintained for conception.

This retrospective study was carried out to assess the maternal and perinatal morbidity and mortality associated with cardiac disease during pregnancy in a tertiary care center.

Materials and methods

A total of 50 pregnancies complicated by heart disease were evaluated retrospectively. The antenatal follow-up records and medical records of both the mothers and newborns were investigated. The patients were classified into four groups according to the New York Heart Association (NYHA) functional classification[5].

Baseline data at the first antenatal visit included maternal age, parity, nature of the underlying cardiac lesion, NYHA functional class, presence of hypertension (blood pressure C 140/90 mm Hg), cardiac intervention prior to pregnancy, cardiac medication and anticoagulant therapy, if any. Electrocardiography and echocardiography were done for all women. Patients were followed up by an obstetrician and a cardiologist in collaboration throughout their pregnancies. Perinatal outcomes such as fetal growth restriction (FGR; <10th percentile), prematurity (B<37 weeks gestation), stillbirth (intrauterine death >20 weeks gestation) or neonatal death (death within the first 28 days of life), birth weight and birth defects were also investigated. NYHA class was assessed for prognostic factors for the maternal as well as fetal outcome. chisquare and Student's t tests were used in statistical evaluation.

Results

Table 1 Demographic characteristics of pregnant patients with cardiac disorders

Demographic characteristics	No of pregnant patients	Percentage
Age groups (Yrs)		
<20	18	36
20-25	25	50
25-30	5	10
>30	2	4
Occupation		
House wife	38	76
Working women	12	24
Parity		
Primi	23	46
Multipara	27	54
Hospital admission		
Booked	24	48
Unbooked	26	52

50% pregnant women were between 20-25 Yrs age group. 76% pregnant women were house wife. 54 % women were multipara and 46% were primi. 52% pregnant women availed hospital services during antenatal period.

Table 2 Distribution of pregnant patients with cardiac disorders according to NHYA classification

NHYA stage	No of pregnant patients	Percentage
Stage I	31	62
Stage II	15	30
Stage III & IV	4	8
Total	50	100

The distribution of the patients according to the New York Heart Association functional classification were determined to be 62%, 30% and 8.00% in NYHA stage I, II and III–IV, respectively.

Table 3 Clinical characteristics of pregnant patients with cardiac disorders

Gestational age at birth (week, mean ± SD)	37.02 ± 4.2
Birth weight (gram, mean ± SD)	3140 ± 824
Cesarean section [n (%)]	28(56%)
Perinatal mortality [n (%)]	2(4%)
Maternal morbidity [n (%)]	9(18%)

The mean gestational week at delivery was 37.02 ± 4.2 Weeks and mean birth weight was 3140 ± 824 gram. There was no maternal mortality encountered, whereas perinatal mortality was observed in two cases.

Discussion

Despite undisputed advances in diagnosis and treatment, maternal heart disease—which complicates around 1–3% of pregnancies in Western countries—still represents an interdisciplinary medical challenge.

Our single tertiary-centre experience documented a 18% incidence of maternal morbidity events during pregnancy in women with congenital and acquired heart disease. Foetal event rate was 4 %. Nevertheless, due to exhaustive interdisciplinary care, 96.00% of the pregnancies resulted in healthy live births. Event rates in our study are comparable to those of other studies. A recent literature review with analysis of more than 2000 pregnancies in women with structural congenital heart disease, reported cardiac complications in 11% of pregnancies [7].

Accurate assessment of the individual maternal and foetal risk in pregnant women with heart disease is of fundamental importance for optimal patient care. Despite the diversity and broad morphological and functional variability of heart diseases, few predictors for complications during pregnancy have been recently described. In a prospective multicentre study enrolling 562 women with heart disease monitored in 13 Canadian hospitals, Siu et al. identified poor functional NYHA class or cyanosis, left ventricular systolic dysfunction, and left heart obstruction as major determinants for maternal cardiac complications [8]. In the clinical setting, this classification proved to be basically useful and enabled reliable assessment not only of maternal but also of foetal/neonatal risk.

In our study the mean gestational week at delivery was 37.02 ± 4.2 Weeks and mean birth weight was 3140 ± 824 gram.

Reduced uterine blood flow secondary to haemodynamic compromise and associated with left ventricular obstruction or reduced myocardial function may explain this impaired intrauterine foetal growth. Finally, obstetric events also accumulated in the high-risk group (more frequent bleeding and more caesareans).

Several limitations of our study must be considered. The retrospective design that necessitates a review of the patients' medical records may be associated with potential source of error. However, information bias was minimized by the uniformity of obstetric and cardiology care giving from the same centre.

Conclusion

During pregnancy by observing full time the incidence of heart disease complication could be reduced.

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