

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20184479>

Original Research Article

Maternal and fetal outcome in cardiac disease in pregnancy: a retrospective study at tertiary care center

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Received: 05 October 2018

Accepted: 15 October 2018

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ABSTRACT

Background: Cardiac disease in pregnancy is a high-risk pregnancy and major problem worldwide particularly developing countries. In present scenario the incidence of pregnancy with congenital heart disease is high in developed countries and they are landing with favourable outcome due to advance surgical correction of the defects. In developing countries, the incidence of RHD is still high. Therefore, in this study we aim to analyse the incidence of cardiac disease in pregnancy in our hospital and to assess the obstetric outcome.

Methods: A retrospective study carried out in 22 number of patients with cardiac disease at tertiary care center during the period of 2 years.

Results: In present study the incidence of cardiac disease in pregnancy was observed to be 0.15%. Among them the prevalence of RHD was high (68.1%). Out of which the most common valvular lesion was mitral stenosis (46.6%) followed by mitral stenosis with mitral regurgitation (26.6%). 50% of the patients were in NYHA class 2. Majority delivered vaginally with instrumental application in second stage (95.4%). Obstetric complications observed in form of anaemia, preeclampsia, abruptio placentae and preterm labour and one maternal mortality. Perinatal morbidities observed in form of prematurity, SGA, birth asphyxia, MSAF, NICU admission.

Conclusions: cardiac disease has major impact on pregnancy and its outcome. It is a team effort by obstetrician, cardiologist, neonatologist to achieve successful pregnancy. Regular antenatal checkup and strict vigilance during the risk period when patient may develop complications as a result of haemodynamic changes can avoid the complications.

Keywords: CHD, MSAF, RHD

INTRODUCTION

Cardiac disease in pregnancy is a high-risk pregnancy which is still a major problem worldwide, particularly in developing countries. It is still a major cause of maternal mortality. Today the management of cardiac disease in pregnancy is a team effort controlled by cardiologists and obstetricians. Obstetricians are often the first to identify cardiac lesions as part of pre-pregnancy and routine antenatal check-up and the ones who often face cardiac emergencies during pregnancy. At present cardiac disease complicates 0.2-4% of all pregnancies in western countries.¹ In developing countries, the incidence is 2%

and contribute to about one-fifth of maternal deaths.² cardiac disease in pregnancy most commonly due to congenital heart disease, rheumatic heart disease, less commonly due to ischaemic heart disease or cardiomyopathy.

Congenital heart disease is the most frequent cardiovascular disease present during pregnancy in developed country, while rheumatic heart disease is predominant in developing country like India.³ Peripartum cardiomyopathy is the frequent cause of severe complications. Pregnancy makes a significant impact on cardiovascular system due to the

haemodynamic changes. Around 15-50% of cardiac abnormalities first diagnosed during routine antenatal check-ups or due to the signs and symptoms caused by physiological changes of pregnancy.⁴

The most common clinical features of cardiac lesions like breathlessness, pedal oedema, murmurs which mimic normal physiological changes in pregnancy pose a diagnostic difficulty to obstetricians. The obstetric complications like preeclampsia, anaemia, preterm labour, fetal growth restriction further worsen the outcome and complicate the management of pregnancy.

Pregnancy related complication along with the cardiac disease is ignored in the rural set up and patient rarely seek proper advice and treatment.

METHODS

This was a retrospective study carried out at the department of Obstetrics and Gynaecology in Maharaja krushnachandra Gajapati Medical College, Berhampur, Odisha during the period of August 2016 to August 2018.

A total 22 pregnant women with cardiac disease admitted during the study period were included in the study. All the patients detailed demographic information, diagnosis, course in hospital, management, maternal and fetal outcome obtained from the records and files.

Inclusion criteria

- Pregnant women with a history of cardiac disease or newly diagnosed cardiac disease after they presented to hospital with cardiac symptoms, evaluated clinically and then sent for necessary investigation. Those who were finally diagnosed with structural or functional cardiac disease were included in the study.

Exclusion criteria

- All condition mimicking heart disease were excluded.

RESULTS

A total of 22 pregnant women with cardiac disease were included in the study. The incidence of cardiac disease in our hospital is 0.15%. Of the 22 patient’s majority of the patients in the age group 21-25 years (45%).

Table 1: Maternal age wise distribution.

Maternal age	Number (%)
18-20 years	4 (18%)
21-25 years	10 (45%)
26-30 years	06 (27%)
30-35 years	02 (9.09%)

Table 2: Maternal characteristic parity distribution.

Parity	Number
Primi gravida	11 (50%)
Second gravida	08 (36.3%)
Gravida 3 or more	03 (13.6%)

Among 22 women 50% were primigravida, 36.3% were second gravida and 13.3% were gravid 3 or more. Of the 22 majority were term gestation i.e. 72.7%.

Table 3: Maternal characteristics gestational age wise distribution.

Gestational age	Number
28-32 week	2 (6.25%)
33-36 week	3 (13.6%)
37-40 week	16 (72.7%)
More than 40 weeks	1 (4.5%)

Most of the patient in the study had rheumatic heart disease (68.1%), followed by congenital heart disease (22.7%), followed by peripartum cardiomyopathy (6.25%). surgical correction was done In 23% of patient prior to pregnancy. In those patients it was congenital heart disease in form of ASD and VSD. No patient have residual disease after correction.

Table 4: Prevalence of type of cardiac disease.

Type of lesion	Percentage
Cardiomyopathy	(6.25%)
Congenital heart disease	(22.7%)
Rheumatic heart disease	(68.1%)

The most common congenital heart disease seen in study population was ASD (60%), followed by VSD (40%). The most common lesion in patients with RHD was mitral stenosis, followed by mitral stenosis with mitral regurgitation, followed by Aortic stenosis . Aortic lesion seen in 3 patients in form of aortic stenosis and in one patient in form of mitral stenosis with mitral regurgitation with aortic stenosis.

Table 5: Type of lesion.

Congenital heart disease (5)	Number
ASD	3 (60%)
VSD	2 (40%)
Rheumatic heart disease (15)	
Mitral stenosis	7 (46.6%)
MS+MR	4 (26.6%)
MS+MR+AS	2 (13.3%)
AS	2 (13.3%)

The functional class of disease as per NYHA classification in present study depicted in (Table 6). Most of the patients are in NYHA class II. The outcome and complications are more in NYHA III and IV.

Most of the patients had vaginal delivery 95.4% and caesarean section was done in one patient, the indication being malpresentation.

Table 6: Functional characters of the disease (NYHA classification).

NYHA	Number
Class I	6 (22.7%)
Class II	11 (50%)
Class III	4 (18.8%)
Class IV	1(4.5%)

The labour was spontaneous in onset in all patients. In all patients with vaginal delivery outlet forcep and ventuse applied to cut short the second stage of labour to reduce maternal distress.

Forcep applied in the preterm babies. Maternal complication was seen in 12 out of 22 patients. The common no cardiac complications noticed were anaemia (66.6%) preterm labour (22.7%), preeclampsia (16.65%), abruptio placentae (25%).

Table 7: Mode of delivery.

Mode of delivery	Number	Percentage
Vaginal delivery	21	95.4
Caesarean section	1	4.5
Instrumental delivery	21	95.4

Cardiac complication seen in form of congestive cardiac failure in 16.6% cases, pulmonary oedema 16.6%. Both the group require ICU support. Maternal mortality occurred in one patient the cause of death was severe mitral stenosis with pulmonary oedema. The following table showing the detail of maternal complications.

Table 8: Maternal complications.

Complication		
Present	12	54.5%
Absent	10	45.4%
Non-cardiac complication		
Anaemia	8	66.6%
Preterm labour	5	22.7%
Preeclampsia	2	16.6%
Abruptio placentae	3	25%
Cardiac complication		
Congestive cardiac failure	2	16.6%
Pulmonary oedema	2	16.6%
Mortality	1	4.54%

The small for gestational age was seen in 54.5% babies, birth asphyxia in 27.2% babies, low APGAR at 1 min IN 27.2%, prematurity in 22.7% babies. NICU admission was 63.6%. perinatal mortality was in 2 cases (9%). One of which was fresh still born at 32 week and one neonatal death due to birth asphyxia.

Table 9: Perinatal complication.

Perinatal complication	Number	Percentage
SGA	12	54.5
Apgar <7 at 5 min	6	27.2
NICU admission	14	63.6
Preterm	5	22.7
Birth asphyxia	6	27.2
MAS/MSAF	5	22.5
Mortality	2	9%

DISCUSSION

Cardiac disease in pregnancy contribute a major risk factor for maternal and perinatal morbidity and mortality. The incidence of congenital heart disease in pregnancy has come down due advance surgical repair technique, but in countries like India both the incidence of congenital and rheumatic heart disease is still high due to poor socioeconomic status, ignorance about symptoms and negligence about own health. The incidence of cardiac disease in pregnancy in present study was 0.15%. It may not reflect the actual prevalence as most centres nearby our hospital is tertiary and referral centre.

Present study shows the predominant lesion was rheumatic heart disease (68.1%) followed by congenital heart disease (22.7%) and cardiomyopathy (6.25%).The results were comparable with Indira et al (80%) and Sheela et al (67%).^{5,6} The most common valvular lesion found to be in present study is mitral stenosis (46.6%),which is comparable with Manohar et al (38.6%).⁷

Rheumatic heart disease complicates about 0.3% to 3.5% of women in child bearing age with global figure of 1%.⁸ It accounts for about 30% of cardiac disease in pregnancy in developed countries and 90 % of cardiac lesion in developing countries.^{9,10}

Out of 22 patient 50% were in NYHA class 2 and 22.7% were in class 1, the complications were not severe in these patients. Among 4 (18.1%) cases who were in class 3 NYHA the complications were in form of pulmonary oedema and CHF. One patient who was in class 4, died due to severe mitral stensis with pulmonary oedema. This result was comparable with Indira et al.⁵ Also the disease progress and the classification become higher class as compare to their status prior to pregnancy.

Maternal complications seen in 54.5% of cases. Obstetric complication in form of anaemia in 66.6% cases others in form of preterm labour, preeclampsia, abruptio. Cardiac complications in form of pulmonary oedema and congestive cardiac failure (16.6%). One patient died due to pulmonary oedema. Perinatal complication were also remarkable in form of prematurity, SGA, NICU admission, birth asphyxia. Authors had two perinatal mortality one due to severe birth asphyxia and other as a

fresh still born. Results were comparable with Prameela et al.¹¹

CONCLUSION

Pregnancy with cardiac disease contribute major morbidity. The incidence of Rheumatic heart disease is still high in India inspite of deliberate use of antibiotics against streptococcal infection. Early detection of cardiac disease in pregnancy, frequent antenatal check-up, emphasizing the risk period for cardiac failure during pregnancy and combine effort of obstetrician, cardiologist, anaesthesiologist and neonatologist may ensure better prognosis for both mother and baby.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Behera R, Moharana JJ. Maternal and fetal outcome in cardiac disease in pregnancy: a retrospective study at tertiary care center. *Int J Reprod Contracept Obstet Gynecol* 2018;7:4399-402.