



CARDIAC DISEASE IN PREGNANCY

Obstetrics & Gynaecology

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ABSTRACT

BACKGROUND: Incidence of heart disease in pregnancy in India is 2.32%. Cardiac disease in pregnancy is important cause of maternal mortality. Problems may arise due to hemodynamic burden and the hypercoagulable state of pregnancy. Identifying women at high risk is an important aspect of care for women with Heart disease.

AIMS AND OBJECTIVE:

To assess maternal and fetal outcome and prognosis in cases of cardiac disease in pregnancy.

MATERIAL AND METHOD: Retrospective analysis of maternal and fetal outcome in cases of cardiac disease in pregnancy was carried out in department of obstetrics and gynecology in civil hospital, Ahmedabad from January 2020 to January 2021

RESULTS: Out of 6000 deliveries there were 60 cases of pregnancy with heart disease (0.99%). Majority belongs to lower socioeconomic status and had rural background. Predominant cardiac lesion was RHD (35%) in patients followed by CHD (25%) followed by PPCM (15%). In patients 63% babies were full term, 53.3% patient had vaginal delivery. There were 2 maternal deaths and 7 near misses. Major complication following delivery included cardiomyopathy followed by pulmonary edema and CCF.

CONCLUSION: majority of pregnancies complicated by heart disease were uneventful with favorably good outcome for mother and the fetus. Strengthening of pre pregnancy counseling with better health facilities for pregnant women with congenital heart disease is key component. Early diagnosis, timely referral are crucial components for developing countries. Multidisciplinary approach needed for management of cardiac diseases in pregnancy.

KEYWORDS

INTRODUCTION

Cardiac disease in pregnancy is a leading cause of maternal death in the developed world. Maternal heart disease complicates between 1% and 4% of pregnancies, and accounts for up to 15% of maternal deaths. The burden of maternal heart disease is expected to increase due to improved survival of women with congenital heart disease (CONHD) and the trend to delay motherhood, with the associated rise in comorbidities such as metabolic syndrome. Thus, heart disease may become an even greater contributor to maternal deaths worldwide.

Cardiac disease in pregnancy constitutes a broad spectrum of conditions, including congenital heart diseases (e.g. ventricular septal defect, transposition of the great vessels), genetic heart diseases (e.g. hypertrophic cardiomyopathy, long QT syndrome, Brugada syndrome), chronic arrhythmia conditions (e.g. Wolff-Parkinson-White syndrome), as well as heart diseases acquired before or during pregnancy (e.g. rheumatic heart disease, ischemic heart disease, peripartum cardiomyopathy (PPCM)).

Many women with cardiac disease have been found to have high rates of unintended pregnancies that may reflect the availability and acceptability of and access to pre-conception and pregnancy counselling by healthcare professionals, as well as gaps in women's contraceptive knowledge and decision making support. Despite clinical available guidelines, limited knowledge exists regarding the healthcare, support and decision-making experiences of women with cardiac disease who are pregnant, or contemplating pregnancy. Insights into women's experiences of planning and undergoing pregnancy including their perceptions and satisfaction are critical to the provision of health services, care and information.

The most common clinical features of cardiac lesions like breathlessness, pedal edema, murmurs which mimic normal physiological changes in pregnancy poses a diagnostic difficulty for obstetricians. However, there is decreased incidence of cardiac disease in pregnancy due to improved facilities and surgical interventions early in childhood.

Though heart disease is often a worrying problem, the study shows that outcome of pregnancy is generally satisfactory and majority of the patients with proper management achieve normal vaginal delivery

after spontaneous onset of labor.

MATERIAL AND METHOD

A retrospective analysis of all pregnant women admitted to department of obstetrics and gynecology in our institute Civil Hospital Ahmedabad from January 2020 to January 2021

Inclusion Criteria

- Patient with known case of RHD or diagnosed during present pregnancy.
- Patient with congenital heart disease.
- Patient with ischemic heart disease.
- Patient with prosthetic heart valve and surgically corrected heart disease.
- Newly diagnosed case of cardiac disease.

Exclusion Criteria:

- Patient who are not willing to participate in study.
- All conditions mimicking heart disease were excluded

RESULTS AND DISCUSSION

In our study, out of total 6020 deliveries during period January 2020 to January 2021, there were 60 cases (0.99%) of pregnancy with cardiac disease and they were studied in terms of maternal and fetal outcomes. Predominant cardiac lesion was RHD (35%) followed by CHD (25%) followed by PPCM (13%). There were 2 cases maternal death and 7 near-misses.

Table 1: Maternal Age And Heart Disease

Age group	Cases (percentage)
<20= Year	8 (13%)
21 year – 25 year	20 (33%)
26 year – 30 year	25 (41%)
31 year – 40 year	7 (11%)

In Present Study Out of 60 patients, 8 patients were from 18-20-year age group, 20 patients were from 21-25 years of age group, 25 patients were 26-30 year's age group, while 7 patients were 31-40 years' age group. This suggests cardiac disease during pregnancy was more common in younger age group, because majority of patient with cardiac disease were first time diagnosed during antenatal, intrapartum

or postpartum period.

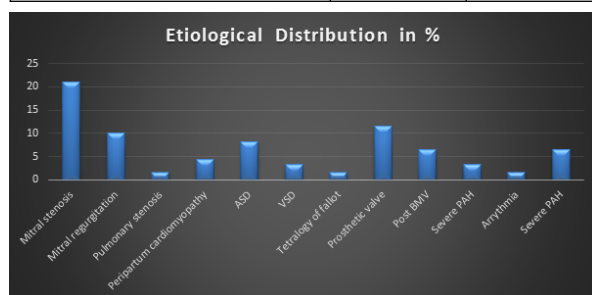
Table 2: Time Of Diagnosis Of Cardiac Disease In Pregnant Women

1. Pre pregnancy	21(35%)
2. During pregnancy	30(50%)
3. Postpartum	09(15%)

This table shows cases of heart disease diagnosed before pregnancy were 35% and case diagnosed during pregnancy, 50% cases diagnosed during current pregnancy while 15% cases diagnosed during postpartum period.

Table 3: Etiological Distribution

Heart disease	No of cases	Percentage
Mitral stenosis	13	21
Mitral regurgitation	6	10
Pulmonary stenosis	1	1.6
Peripartum cardiomyopathy	7	11.6
ASD	5	8.3
VSD	2	3.3
Tetralogy of fallot	1	1.6
Eisenmenger 's syn.	2	3.3
Ebstein anomaly	1	1.6
Bicuspid aortic valve	1	1.6
Coarctation of aorta	1	1.6
TGA	1	1.6
Prosthetic valve	7	11.6
Post BMV	4	6.6
Arrhythmia	1	1.6
Severe PAH	2	3.3



This table showing type of heart disease with etiological distribution. RHD still constitute major group of heart disease in pregnancy, especially in developing countries. In present study shows RHD consisted 21 out of 60 cases which consist of 35%

Various author have describe the proportion of CHD ranging from 4% to 8% in this study CHD consist of 25% of total cases it may due to easy availability of diagnostic technique like 2D-Echo. So trivial condition like bicuspid aortic valve and mitral valve prolapse have also been increasingly recognized in minimally symptomatic patient.

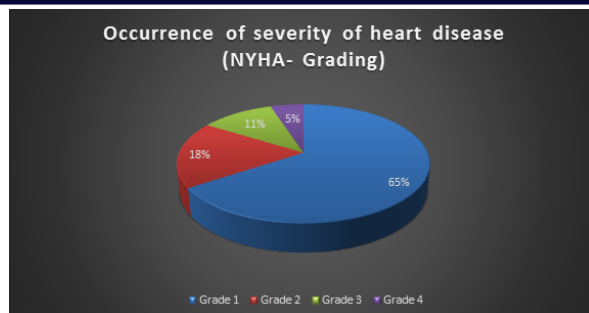
Table 4: Relationship Of Gravidity With Heart Disease

Gravidity	RHD	CHD	PPCM	Others	total
1	10	5	1	1	17
2	9	1	4	2	16
3	5	2	3	1	11
≥4	7	2	5	2	16
total	31	10	13	6	60

This table shows there were 17 primi-gravidae, 16 second gravidae, gravidae and 16 multi gravidae patients. Probably parity has no adverse effect on heart disease (pinto rosario 1975).

Table 5: Occurrence Of Severity Of Heart Disease (nyha- Grading)

Grade	No of patient	Percentage
1	39	65
2	11	18
3	7	11
4	3	5



This table shows most patients were in grade 1 and grade 2 of NYHA classification. With proper care and management normal labor and delivery were achieved in most of this patient. The patient of grade 3 and 4 were immediately hospitalized because as the grade increase the maternal and fetal prognosis worsens.

Table 6: Obstetrical Outcome

Mode of delivery	No of patients	%
Normal Vaginal Delivery	32	53.3
Assisted vaginal delivery	2	3
1. Forcep	1	1.6
2. vaccum	1	1.6
Caesarean sections	26	43
1. caerean section for obstetrical indication	9	15
2. caerean section for cardiac indication	17	28

This table depicts following. The patient with heart disease normally have spontaneous vaginal delivery in most cases. Out of 60 cases 32 case have normal vaginal delivery while 26 cases undergo caesarean section and indication of caesarean section in most of cases were cardiac condition. 3% cases were under go assisted vaginal delivery.

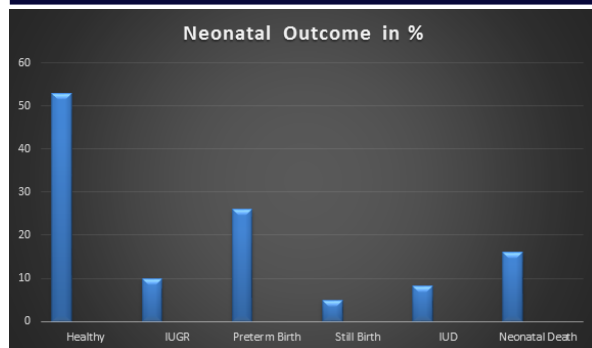
Table7: Occurrence Of Various Complication

Complications	No of patients
Congestive Cardiac Failure	3
Pneumonia	-
Pleural Effusion	1
Pulmonary Edema	4
Thromboembolism	-
Maternal Mortality	2
Post-Partum Hemorrhage	-
Cardiomyopathies	7
Pericardial effusion	1

Total 16 patients developed complications. Out of 60 cases 4 patient developed CCF, 1 patients were developed pleural effusion and 4 patient developed pulmonary edema. 2 mortalities occurred. One was due to dysfunctional prosthetic valve and one due to congestive cardiac failure causing cardiorespiratory dysfunction arrest. None of the patient developed acute rheumatic fever probably due to improved and regular prophylaxis by Inj. Benzathine Penicillin 1.2 MU IM every 21 days which is very effective drug in preventing attacks of rheumatic fever. Most of the patients who developed complications belonged to NYHA grade 3 to 4 from the very beginning and thus this shows that as the functional grade increases the incidence of cardiac decompensation also increases. In developing countries like India, cardiac disease complicates 2% of pregnancies and contribute to 1/5 of all maternal death. Those patient with a treated cardiac valvular lesion with prosthetic valve pose a special problem at time of delivery. These patients were at increased risk to develop complications like thrombosis, endocarditis. In present study one patient develop thrombosis.

Table8: Neonatal Outcome

Outcome	Number	%
Healthy	32	53
IUGR	6	10
Preterm birth	16	26
NICU admission	20	33
Still birth	3	5
IUD	5	8.3
Neonatal death	10	16



In present study out of 60 fetuses, 52 were delivered live either pre term or full term, 3 babies were still born, 5 IUD and no case was remaining undelivered.

In the present study, out of total 52 live birth, 20 babies were admitted in the NICU. Among them, 5 babies were full term and 15 babies were preterm. It indicates that prematurity is the leading cause for NICU admission in present study.

Neonatal mortality rate in the present study is 16%. There were multiple causes of neonatal mortality including Prematurity, Hyaline membrane disease, Meconium aspiration syndrome and Septicemia.

Out of 60 cases, 44 cases were referral to our tertiary care center.

DISCUSSION

In the present study, prevalence of heart disease was found to be 0.99% with RHD being the predominant disease (35%) with mitral valve most commonly involved. About 65% patients were in NYHA I at the time of first presentation which is in concordance with the study of Bhatla et al. and Abdel-Hady et al.

In the present study, majority of the patients were diagnosed to have heart disease first time during pregnancy. As most patients remain asymptomatic before pregnancy and the underlying condition is unmasked due to hemodynamic changes of pregnancy or when disease itself is severe enough to produce symptoms.

In cases of heart disease instrumental delivery with forceps or vacuum is preferred, in order to prevent maternal strain and exhaustion. In the present study, 3% had instrumental delivery and 97% delivered without assistance. Epidural analgesia is recommended for all patients undergoing vaginal delivery; it prevents tachycardia and avoids strain on heart. In present study, epidural-anaesthesia was safely used only 1 patient who underwent C/S while others were given GA.

In the present study, 90% patient had live birth, 5% had still birth, Small for gestational age babies were seen in 10% of women with cardiac disease as reported by Sawhney et al. This suggests that cardiac disease itself could be one of the risk factors for low birth weight.

Three cases who had prosthetic valve in our study cohort had no complication due to monitored therapy except for one mortality due to dysfunctional prosthetic valve. Non-valvular factors such as anemia 62 (57%) and sepsis 5 (4.6%) were the precipitating factors for heart failure in our patients. 2 patients developed cardiac arrhythmia.

In the present study, 11% of present patients underwent palliative or valve replacement surgery before pregnancy and 4 patients underwent balloon mitral valvuloplasty during second trimester of pregnancy. All of them tolerated pregnancy well.

There were 2 maternal deaths in the present study. One patient who died was a case of dysfunctional prosthetic valve and presented in NYHA Class IV. Second patient died because of post-partum cardiac failure was known severe MS and presented with NYHA class III. The outcome of pregnancy was determined by the maternal functional status in the first trimester of pregnancy. NYHA Class III and IV strongly predicted an adverse maternal outcome.

CONCLUSION

The results of our study indicate that heart disease forms a substantial proportion of medical illness complicating pregnancy. Motherhood is one of the most important landmarks of women making this experience

harmless and free of complication is the goal of obstetrician.

Healthy Mother with healthy baby, no NICU admission should be the aim of every obstetrician.

Cardiac diseases in pregnant women pose a challenging task to the obstetrician, the physician, the cardiologist and to the neonatologist. Therefore multidisciplinary approach for managing cardiac disease is important. But the majority of pregnancies complicated by heart disease are uneventful with a favorable good outcome for both the mother and the fetus if appropriate Antenatal and medical care is available.

Regular ANC and institutional deliveries enable the obstetrician to diagnose cardiac disease in pregnancy and its complications on early stage and early intervention results in better outcome.

Counseling regarding cardiac condition, proper diet, rest and prevention of infection, timely follow-up is the important element in treatment of cardiac diseases in pregnancy.

Failure to systematically search for cardiac disease in pregnant women has led to late diagnosis and high rates of fatal complications. Therefore, effective screening for cardiac disease in pregnant women is warranted.

Use of prophylactic antibiotics, anti cardiac failure treatment during labor may bring down the incidence of infective endocarditis and cardiac failure during antenatal as well as puerperal period.

Educating the community about the cardiac disease and its complications, need for early detection of cardiac lesion, close monitoring during antenatal period, intrapartum period and postpartum care play a vital role in achieving good fetal-maternal outcome.

Maternal mortality can be reduced simply by proper counseling and education in women regarding their cardiac condition.

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