

Obstetric Outcome in Pregnancy with Heart Disease

Dr. Romi Rai¹, Dr. L. Bimolchandra Singh², Dr. Kh. Pratima Devi³

¹PGT, Department Of Obstetrics And Gynaecology, Regional Institute Of Medical Science, Imphal, Manipur State.

²Associate Professor, Department Of Obstetrics And Gynaecology, Regional Institute Of Medical Science, Imphal, Manipur State.

³Assistant Professor, Department Of Obstetrics And Gynaecology, Regional Institute Of Medical Science, Imphal, Manipur State.

Corresponding author: Dr. Romi Rai

Abstract:

Background: Pregnancy associated with any form of heart disease is a challenge for both obstetrician and cardiologist. The advancement in surgical techniques & minimal invasive surgeries have improved the prognosis of congenital lesions and many women even with severe defects are now reaching the child bearing age. The number of pregnant women with coronary disease is expected to grow due to advanced maternal age and increased cardiovascular risk factors in women.

Materials and Methods: This study was carried out in the department of Obstetrics and Gynaecology in collaboration with department of medicine, Regional Institute of Medical Sciences, Imphal, Manipur. All the patients admitted in antenatal ward and delivered at period of gestation 28th weeks and beyond during the study period of November 2014-April 2016 were included in the study.

Results: Primigravida accounted for the majority group of heart disease with pregnancy and majority (90%) of them delivered at term and 10% had preterm delivery. Cardiac complications like pulmonary hypertension and congestive cardiac failure were present in 13.3% of cases.

Conclusions: Rheumatic heart disease still remains the most common cardiac problems found in pregnant women in our country. The incidence of heart disease in pregnancy was found to be 0.2% and majority of them belonged to 30-39 years group, unbooked and from rural background.

Keywords: Pregnancy, heart disease, primigravida, and outcome.

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I. Introduction

Pregnancy associated with any form of heart disease is a challenge for both obstetrician and cardiologist. Cardiac disease has significant impact on maternal health during pregnancy, labour and deliveries. Even though heart disease complicates only 0.1 to 4% pregnancies worldwide but it contributes to significant amount of maternal mortality and morbidity.^{2,1,3} Improvements in health care services in recent decades have permitted more frequent identification of pregnant women with congenital and acquired heart disease.⁴ The advancement in surgical techniques & minimal invasive surgeries has improved the prognosis of congenital lesions and many women even with severe defects are now reaching the child bearing age.⁵ In developed countries, congenital heart disease accounts for majority of heart disease in pregnancy, which is mainly due to decline in the incidence of rheumatic heart disease⁶ but rheumatic heart disease still is the commonest heart disease in pregnancy in developing countries. Hemodynamic changes during normal pregnancy are well tolerated by women with normal cardiac reserve. Diseased heart shows signs of decompensation with resultant increase in morbidity and mortality. It is natural to expect that the fetus would also be compromised in these mothers. Fetal health depends upon an adequate and continuous supply of well-oxygenated maternal blood. In uncompensated heart disease, the oxygen supply becomes limited and that result in compromised fetal growth, there can be growth restriction, premature birth or even fetal death. Women with heart disease who desire or anticipate pregnancy should have preconceptional counselling. Most women with heart disease have successful pregnancies, but complacency in the diagnosis and management of pregnant patients can have dire consequences for both the mother and the fetus.⁹ Heart diseases are the most important non obstetrical causes of maternal deaths during pregnancy, accounting for almost 20% of maternal deaths.^{4,10} A pregnant woman with heart disease who wish to continue pregnancy should have proper cardiac evaluation and should be managed by joint team of obstetrician, cardiologist, anaesthetist and neonatologist. She should have regular cardiac function evaluation and planned elective delivery.

II. Aims and Objectives of the study

1. To determine the incidence of heart disease during pregnancy.
2. To evaluate the maternal and perinatal outcomes of pregnancies complicated by heart disease.

III. Results and Analysis

Total No. Of Deliveries: **16,968**

Total No. of pregnancies with heart diseases delivered: **30 (0.18%)**

Table 1: Distribution of Heart Diseases in Pregnancy by residence.

Residence	Number of Cases	Percentage
Urban	5	16.7
Rural	25	83.3
Total	30	100.0

In this study, as shown in table 1, heart disease in pregnancy was more common in rural community (83.3%) than urban community (16.7 %).

Table 2: Distribution of heart diseases in pregnancy by maternal age.

Age	Number of cases	Percentage
20-29	13	43.3
30-39	16	53.3
≥40	1	3.3
Total	30	100.0
Mean ± SD	30.46 ± 5.78	

Out of 30 cases, the maximum number of cases were found to be in the age group 30 – 39 years (53.3 %), followed by 20-29 years (43.3 %). There was only 1 case above 40 years, which is shown in table 2.

Table 3: Distribution of heart diseases in pregnancy by parity.

Parity	Number of cases	Percentage
0	15	50
1	10	33.3
2	4	13.3
≥3	1	3.3
Total	30	100.0

In the study, heart disease in pregnancy were more common in primigravidas (50%) compared to para 1 (33.3%), para 2 (13.3 %) and para ≥3 (3.3 %), as shown in table 3.

Table 4: Distribution of heart diseases in pregnancy by gestational age at the time of delivery

Gestational age (in weeks)	Number of cases	Percentage
< 36+6	3	10
37-40	25	83.3
40+1-42	2	6.7
Total	30	100.0

Above table shows that 25 cases (83.3%) delivered after completing 37 weeks, preterm deliveries was observed in 3 cases (10%) of study group. Only 2 cases (6.7 %) delivered beyond 40 weeks, no post term deliveries observed in the study.

Table 5: Distribution of heart diseases in pregnancy by booked status

Booked Status	Number of cases	Percentage
Booked	13	43.3
Unbooked	17	56.7
Total	30	100.0

Out of 30 cases, 17 were unbooked (56.7%) and 13 were booked (43.3%) as shown in table.

Table 6: Distribution of types of heart diseases in pregnancy.

Types	Number of Cases	Percentage
RHD	19	63.3
CHD	8	26.7
Misc.	3	10
Total	30	100.0

Most common heart disease in pregnancy in this study was found to be Rheumatic Heart Disease (RHD) (63.3 %), followed by Congenital Heart Disease (CHD) (26.7 %). Only 3 cases of miscellaneous heart disease was found (10 %) as shown in the table above.

Table 7: Distribution of different lesions of RHD.

Types of RHD	Number of Cases	Percentage
MS	5	26.3
MS+AR	3	15.7
MS+TR	2	10.5
MR+AR	1	5.2
MS+AR+TR	1	5.2
MR+TR	4	21.4
TR	1	5.2
AS	2	10.5
Total	19	100.0

In this study, isolated MS (26.3%) was found to be the most common lesion among RHD, followed by combination of MR+TR (21.4%) as shown in Table above.

Table 8: Distribution of different lesions of CHD.

Types of CHD	Number of cases	Percentage
VSD	1	12.5
ASD	4	50
PDA	2	25
TOF	1	12.5
Total	8	100.0

Atrial Septal Defect (ASD) (50%) was the commonest lesion among CHD, followed by Patent Ductus Arteriosus (PDA) (25 %) in this study as shown in table above.

Table 9: Distribution of NYHA grading on admission

NYHA	Number of cases	Percentage
I	10	33.3
II	15	50
III	5	16.7
IV	0	0
Total	30	100.0

As shown in the table above, majority of the cases were found to have NYHA grade I-II (83.3%). 16.7% cases of NYHA grade III were found. No case of NYHA grade IV was found.

Table 10: Distribution of cardiac complications:

Cardiac Complications	Number of cases	Percentage
CCF	1	3.3
PAH	3	10

Only 3 cases had pulmonary hypertension (10%) and 1 case had congestive cardiac failure (3.3%) in this study, as shown in table.

Table 11: Distribution of obstetric complications.

Obstetric Complications	Number of cases	Percentage
Anaemia	2	6.6
PPH	1	3.3
Preterm Labour	3	10

As shown in the table above, preterm labour (10 %) is the commonest obstetric complication followed by anaemia (6.6 %) in the study. There was 1 case of PPH (3.3 %).

Table 12: Distribution of mode of delivery

Mode of Delivery	Number of cases	Percentage
NVD	5	16.3
Ventouse VD	7	23.3
Forceps VD	1	3.3
Em LSCS	12	40
EI LSCS	4	13.3
VBAC	1	3.3
Total	30	100

In this study, majority of the patients delivered by Em LSCS (40 %), followed by Ventouse VD (23.3 %). 4 cases had NVD (13.3 %) also 4 cases had EI LSCS (13.3 %). There were 1 each Forceps VD, Preterm VD and VBAC respectively (3.3 %).

Table 13: Distribution of onset of labour

Onset	Number of cases	Percentage
Induced	4	15.4
Spontaneous	22	84.6

above, spontaneous onset of labour was seen in 86.7% and in 13.3 % labour was induced.

Table 13: Distribution of birth weight

Birth Weight (In kg)	Number of cases	Percentage
< 2.5	5	16.7
2.5-3.4	18	60
3.5-4	6	20
>4	1	3.3
Mean ± SD	2.93 0.55	

In this study, majority of the baby's birth weight was found to be 2.5-3.4 (60 %) followed by 3.5-4 (20%). 16.7% babies birth weight was below 2.5 kg and 1 baby's birth weight was more than 4 kg.

Table 14: Distribution of Apgar score

Apgar Score at 5min	Number of cases	Percentage
<9	5	16.7 %
>9	25	83.3 %

83.3% of babies had apgar score of > 9 at 5 minutes and 16.7% had < 9 at 5 minutes.

Table 15: Distribution of adverse neonatal outcome

Adverse neonatal outcome	Number of cases
IUD	0
Congenital anomaly	0
Neonatal death	0
NICU	5

IV. Discussion

Heart disease continues to be a risk factor for maternal and neonatal morbidity and mortality in pregnant women where pregnancy in itself is a state of hemodynamic stress. This study reflects the maternal and fetal outcome in pregnant women with cardiac disease managed at a government hospital, which is also a tertiary care referral centre in North-eastern region of India. Prevalence of heart disease in pregnancy varies from 0.1 to 4% in different studies^{2,1,3}. In our study, the incidence was 0.2%, which is comparable with the studies conducted by Ashwini Met al¹⁰ (0.4%) and Indira Iet al⁶(0.43%). Most of our patients had RHD (63.3%) which was also found to be the major form of heart disease in studies done by Ashwini M et al¹⁰ (66.7%) and Kapoor P et al⁴(64.9%). Mitral stenosis (26.3%) was the commonest lesion among acquired disease which was similar to Indira I et al⁶ (25%) however this is not in agreement with the findings of Sawhney H et al¹⁶(89.2%). Congenital heart disease accounted for 26.7% of cases, results were comparable with studies done by Nayak R et al⁸ (26.6%) and Sawhney H et al¹⁶(26.1%) but in difference with the findings of Siu S et al¹⁴ (74%) which is due to decline in incidence of rheumatic origin of heart diseases in western countries. Atrial septal defect was diagnosed in 50 % patients which is similar with the findings of Koregol M et al¹³. None of these patients had any history of surgery done for correcting the cardiac anomaly. In our study, Primigravida (50%) accounted for the major group, similar results were noted in study by Koregol M et al¹³ (52.7%).

In our study, majority (90%) of the patients delivered at term and 10% had preterm delivery which is comparable with the study done by Kapoor P et al ⁴. Out of total 30 patients, 16(53.3%) had caesarean delivery and remaining 14 (46.6%) had vaginal delivery. These observations were similar to study done by Thakkar J et al ⁵ which showed that, 60% of cases had caesarean delivery and 40% delivered vaginally. Our institution being the referral center, majority of cases were referred from peripheral settings for various obstetric indications for which caesarean delivery was required. Among the vaginal deliveries, 5(16.3%) patients had a normal vaginal delivery while 8 patients (26.6%) underwent instrumental delivery (vacuum delivery in our study, 1 had outlet forceps delivery) to cut down the second stage of labor. 1 patient had VBAC. These are comparable with the findings of study done by Kapoor P et al ⁴ which shows 20.2 % of instrumental deliveries. Most (53.3%) patients in this study were in the age group of 30-39 years, mean maternal age was 30.46±5.78. 1 patient was > 40 years. In a study by Nayak R et al ⁸ majority (70%) of the patients were in age group of 20-29 years. Advanced age in this study may be due to high literacy rate and career pursuit. Majority were from rural background and unbooked. Cardiac complications were present in 4 (13.3 %) cases. These included 3 cases of pulmonary hypertension and 1(3.3%) case of congestive cardiac failure. There was no maternal mortality and no ICU admission was required. In our series mean birth weight was 2.93 ± 0.55 kg, smallest being 1.7 kg and largest being 4.4 kg. Out of 30 babies 27 babies delivered at term and 3 babies delivered preterm. 5 (16.7%) babies were low birth weight which is in difference to findings of other studies ⁴, which is possible because of average weight of babies are more in this institute. 5 (16.7%) babies had Apgar score less than 9/10 at 5 minutes which is comparable with the findings of Koregol M et al ¹³

V. Conclusion

Incidence of heart disease in pregnancy in the study was found to be 0.2%. Mean age of the patients were 30.46±5.78 years and majority of them belonged to 30-39 years group and were unbooked, from rural background. Cardiac complications were seen in 13.3% of cases and preterm labour (10%) was the commonest obstetric complications. Most of the patients (83.34%) delivered at 37-42 weeks and 53.3% had caesarean delivery. Mean birth weight was 2.93±0.55kg and 83.3% babies had Apgar Score of >9 at 5 minutes.

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