

**A PROSPECTIVE STUDY OF FETOMATERNAL OUTCOMES IN PREGNANCY
WITH DIFFERENT CARDIAC DISEASE AT A TERTIARY CARE CENTER**

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Abstract

Introduction: Heart disease complicates 1% of all pregnancies. Cardiac abnormalities are considered the leading non-obstetric cause of maternal morbidity and mortality. Though rare in developed country, rheumatic heart disease is still predominant in developing countries and continues to be a major cause of maternal morbidity and mortality.

Materials and Methods: This was a hospital based prospective observational study that include 130 pregnant women booked or non-booked, who were admitted in the department of obstetrics and gynecology, Govt Medical College, Ananthapur with diagnosed cardiac disease or had symptoms and signs suggestive of cardiac disease which were later confirmed by relevant investigations during the study period of May 2022 to April 2023.

Results: In our study, the mean age of the patients was 24.33±2.93 years (ranging from 19-36 years). Most commonly affected age group was 21-25 years (64.62%) followed by age group 26-30 years (23.08%). 68 patients (52.30%) were primigravida, while the 32 patients (24.62%) were gravida 2, remaining 30 cases (23.07%) were gravida 3 and more. Mean gestational age at delivery was 37.46±2.14 weeks. Majority patients (70.77%) are present between 37-40 weeks of gestational age. Majority (58.46%) cases were from rural area. Out of 130 patients, 54 patients (41.54%) were booked while 76 patients (58.46%) were unbooked. Most unbooked patients are from rural area. Most of patients had vaginal delivery (64.62%) with spontaneous onset in 70 patients (53.85%) and induced in 14 cases (10.78%).

Conclusion: The results of the present study suggest that management of the pregnant women with cardiac abnormalities should be multidisciplinary to enhance care for these patients. There is need for pre-pregnancy counseling, early diagnosis, correction of cardiac lesions where indicated, close surveillance during pregnancy and a team approach comprising of obstetricians, cardiologists, neonatologists and nursing personnel for a successful pregnancy outcome. It is mandatory to provide better health care facilities to rural and periphery areas for diagnosis and management and early referral in such pregnant to prevent morbidity and mortality.

Key Words: Heart disease, maternal morbidity, mortality.

INTRODUCTION

Heart disease complicates 1% of all pregnancies. Cardiac abnormalities are considered the leading non-obstetric cause of maternal morbidity and mortality. Though rare in developed country, rheumatic heart disease is still predominant in developing countries and continues to be a major cause of maternal morbidity and mortality.¹

The hemodynamic changes of pregnancy can have a negative impact on maternal health, especially in women with preexisting cardiac disease as the diseased heart may not be able to adjust with extra load resulting in heart failure and even in mortality. Women with rheumatic heart disease, especially significant mitral stenosis tolerate pregnancy poorly.²

Pregnancy counseling and management of women with heart disease is being increasingly recognized as important aspect of their overall cardiac care. Clear risk stratification influences therapeutic decisions during pregnancy as does counseling about future gestations.³

The primary goal of care for the pregnant woman and her family when cardiac disease complicates the pregnancy is prevention of complications that may occur from the cardiac condition through performing a comprehensive assessment to identify individual needs for teaching, emotional support and physical care.⁴ This is accomplished by education of the woman and husband; assessment of all systems involved on a routine basis; referral to appropriate nutritional, social and medical experts; and facilitation of patient participation in decisions. Early diagnoses, proper follow up and counselling are keys for reducing morbidity and mortality and this strategy requires a collaboration between obstetrician and cardiologists.⁵

The study was done with the objective to determine the Incidence and distribution of cardiac disease in pregnant patients, to assess mode of delivery and fetomaternal outcome in pregnancy with heart disease patients.

MATERIALS AND METHODS

This was a hospital based prospective observational study that include 130 pregnant women booked or non-booked, who were admitted in the department of obstetrics and gynecology, Govt Medical College, Ananthapur with diagnosed cardiac disease or had symptoms and signs suggestive of cardiac disease which were later confirmed by relevant investigations during the study period of May 2022 to April 2023.

Inclusion criteria: Only those pregnant ladies with heart disease (CHD and RHD with valvular lesions) who were got admitted and delivered during the study period were included.

Exclusion criteria: Patients with associated medical disorders like diabetes mellitus, thyroid disease, pulmonary disease, renal disease, myocardial infarction (MI) and stroke were excluded from this study.

Apart from obstetric indications, women were hospitalized if they had overt symptoms and signs suggestive of worsening cardiac status, if they were in NYHA class III and IV irrespective of the period of gestation. A pre tested semi structured proforma was used to collect the relevant information by interviewing, clinical examination of patients, relevant investigation and treatment for each case. Baseline data recorded including age, parity, gestational age, cardiac lesions, New York heart association (NYHA) functional class, use of cardiac medications, thorough clinical examination including chest and cardiovascular auscultation, ECG and echocardiographic assessment of left and right ventricular systolic function. Which will be confirmed on consultation of experts (physician, Cardiologist) by specific interventions. Fetal echocardiography was performed in patients with congenital heart disease (CHD) and in those who had received anticoagulants during pregnancy. The mode of delivery whether vaginal, use of instrumental or the caesarean will be decided as per needful management of patients. Heparin was discontinued at the onset of labor. All patients received antibiotics for prophylaxis against infective endocarditis during labor. They were kept in a propped-up position. Intermittent oxygen and analgesics were provided whenever needed. Following delivery, injection furosemide 20 mg was administered intravenously. Oxytocin was used for control of postpartum hemorrhage. Women who had been on anticoagulants were restarted on heparin within 4 h of vaginal delivery and 8 h of cesarean delivery. Oral anticoagulants were resumed and heparin discontinued when pro-thrombin time reached 1.5–2 times normal. Early ambulation was encouraged. Patients remained in hospital for 5–7 days postpartum. Maternal outcomes were analyzed on the basis of antepartum, intrapartum, postpartum new-onset or exacerbation of cardiac complications, postpartum complications. Neonatal outcome was studied.

Statistical analysis: Data were presented as Mean±SD. Statistical significance was accepted at the 95% confidence level ($p=0.05$). The Chi square test was applied.

RESULTS

The present study consisted of 130 pregnant patients during the study period of May 2022 to April 2023. (Table 1) Presents demographic data of the patients. In our study, the mean age of the patients was 24.33 ± 2.93 years (ranging from 19-36 years). Most commonly affected age group was 21-25 years (64.62%) followed by age group 26-30 years (23.08%). 68 patients (52.30%) were primigravida, while the 32 patients (24.62%) were gravida 2, remaining 30 cases (23.07%) were gravida 3 and more. Mean gestational age at delivery was 37.46 ± 2.14 weeks. Majority patients (70.77%) are present between 37-40 weeks of gestational age. Majority (58.46%) cases were from rural area. Out of 130 patients, 54 patients (41.54%) were booked while 76 patients (58.46%) were unbooked. Most unbooked patients are from rural area. Most of

patients had vaginal delivery (64.62%) with spontaneous onset in 70 patients (53.85%) and induced in 14 cases (10.78%).

Variables	No. of patients	Percentage
Age group (years)		
18-20	12	9.20
21-25	84	64.60
26-30	30	23.08
>30	4	3.07
Parity		
Primigravida	68	52.30
Gravida 2	32	24.62
Gravida 3 and more	30	23.07
Gestational age in weeks		
28-32	2	1.54
33-36	28	21.54
37-40	92	70.77
>40	8	6.15
Inhabitant		
Rural	76	58.46
Urban	54	41.53
Booking status		
Booked	54	41.54
Unbooked	74	58.46
Vaginal delivery		
Spontaneous	70	53.85
Induced	14	10.78
Caesarean section (LSCS)		
Elective	18	13.84
Emergency	28	21.54

Table 1: Sociodemographic details

Variables	No. of patients	Percentage
Time of diagnosis		
Before pregnancy	44	33.85
After pregnancy	86	66.15
Type of cardiac disease		
ASD	14	50
Congenital heart disease	28	21.54
VSD	10	35.71
Tetralogy of Fallot	2	7.14
Eisenmenger syndrome	2	7.14
Acquired heart disease	102	78.46
NYHA class		

I	42	32.31
II	58	44.62
III	22	16.92
IV	8	6.15

Table 2: Clinical observations in study participants

Cardiac lesions	No. of patients	Percentage
MS	28	31.82
MR	10	11.36
MS+MR	8	9.09
MS+TR	8	9.09
MS+MR+TR	14	15.90
MS+MR+TR+PR	6	6.81
MS+MR+TR+AR	6	6.81
MS+AR	2	2.27
MS+TR+AR	2	2.27
MS+MR+AR	4	4.54
Total	88	100

Table 3: Distribution of valvular lesions among rheumatic heart disease cases

Complications	No. of patients	Percentage
Fetal complications		
IUGR	14	10.76
NICU admission	36	27.69
Prematurity	24	18.46
Birth asphyxia	06	4.62
Still birth	02	1.53
Maternal complications		
Present	80	61.53
Absent	50	38.46

Table 4: Fetal and maternal complications

Complications	Medication		Total	P Value
	Yes	No		
Fetal	12	4	16	0.806
Neonatal	18	12	30	0.848
Maternal	12	40	52	0.786
Total	42	56	98	-

Table 5: Comparison of fetomaternal complications with or without cardiac medications

DISCUSSION

Total number of pregnant patients with heart diseases delivered during the study period at our institute was 130 out of 30,000 deliveries. Incidence of heart disease in the study was 0.44%. Reason may be underreporting of the deliveries at periphery by Dais or other health personnel's and they remain undiagnosed. Similar findings were seen in the study conducted by Prasanna et al where the incidence of heart disease was 0.5%. Incidence of heart disease in pregnancy varies from 0.5-3%.⁶

In our study, the mean age of the patients was 24.33 years (ranging from 19-36 years). The age group 21-25 year is most commonly affected 64.62% (84 cases) followed by age group 26-30 years 23.08% (30 cases). In a study conducted by Sayeeda et al it was reported that the mean age of the patients was 27.00 years (ranging from 18-35 years) and most (82%) belonged to age group 21-30 years.⁷

Out of 130 cases enrolled for the study, 52.30% patients (68 cases) were primigravida while the 24.62% patients (32) were gravida 2, remaining 23.07% cases (30) were gravida 3 and more. Trevino et al reported in their study that 62.5% patients were nulliparous. Sayeeda et al also showed in their study that most of the patients (46%) were primigravida.⁸

In our study population of 130 patients, mean gestational age at delivery was 37.46±2.14 weeks. In a study conducted by Aisha et al, it was reported that mean gestational age at delivery was 36.8±5.64 weeks. Maximum number of patients had term delivery i.e., 65.45%.⁹

In our study out of 130 cases, majority (76 cases, 58.46%) cases from rural area and 41.53% (54 cases) from urban area. Similar findings were seen in the study conducted by Pandey et al where out of 117 patients, 41.02% (48) from urban and 58.9% (69) from rural area.¹⁰

CONCLUSION

The results of the present study suggest that management of the pregnant women with cardiac abnormalities should be multidisciplinary to enhance care for these patients. There is need for pre-pregnancy counseling, early diagnosis, correction of cardiac lesions where indicated, close surveillance during pregnancy and a team approach comprising of obstetricians, cardiologists, neonatologists and nursing personnel for a successful pregnancy outcome. It is mandatory to provide better health care facilities to rural and periphery areas for diagnosis and management and early referral in such pregnant to prevent morbidity and mortality.

REFERENCES

1. Wasim T, Arner W, Majrroh A, Siddiq S. Fetomaternal outcome of pregnancy with cardiac disease. J Pak Med Assoc 2008;58:175-8.

2. Dajani AS, Tauber K, Femen P, Peter G, Shulman S: Treatment of streptococcal pharyngitis and prevention of rheumatic fever. *Paediatrics* 199; 96:758-64.
3. Nqayana T, Moodley J, Naidoo DP. Cardiac disease in pregnancy. *Cardiovasc J Afr* 2008;19:145-51.
4. Perloff JK. Congenital heart disease and pregnancy. *Clin cardiol* 1994;17:579-87.
5. Silversides CK, Colman JM, Sermer M, Siu SC. Cardiac risk in pregnant women with rheumatic mitral stenosis. *Am J Cardiol* 2003;91:1382-5.
6. Bhatla N, Lal S, Bhehra G, Kriplani A, Mittal S, Agarwal N, K Talwar KK. Cardiac disease in pregnancy. *Int J Obstet Gynecol* 2003;82:153-9.
7. ES Abdel Haby, ME Shamy, AAE Fifai, H Goda, A Sammad. Maternal and perinatal outcome of pregnancies complicated by cardiac disease. *Int J. Obstet gynecol* 2005;90:21-2.
8. Siu SC, Sermer M, Colman JM, Alvarez AN, Mercier LA, Morton BC, et al. Prospective multicenter study of pregnancy outcomes in women with heart disease. *Circulation* 2001;104:515-21.
9. Prebitero P, Prever SB, Brusca A. Interventional cardiology in pregnancy. *Eur Heart J* 1996;17:182-8.
10. Laura LK, Henry LG. Management of the high risk pregnancy: Cardiac disease in pregnancy. *Obstet & Gynaecol clinics of North America* 2004(June);31:429-59.