VOLUME-8, ISSUE-3, MARCH-2019 • PRINT ISSN No 2277 - 8160

Original Research Paper

Obstetrics and Gynecology

A STUDY OF MATERNAL AND FETAL OUTCOME IN PREGNANCIES COMPLICATED BY CARDIAC DISEASE

Dr. Rashmi. H. S Assistant Professor, Department of OBG, JSS Medical College and Hospital, JSS University, Mysuru

Dr. Nandish S. Manoli* Professor, Department of OBG, JSS Medical College and Hospital, JSS University, Mysuru *Corresponding Author

Dr. Srinivas. H. T Department of Anaesthesia, JSS Medical College and Hospital, JSS University, Mysuru

ABSTRACT

Background: Approximately 1% of pregnancies are complicated by cardiac disease, and the management of these cases can challenge the entire team providing care to the mother and fetus. Rheumatic heart disease, despite declining incidence among western population still accounts for most cases in the developing nations. However, the incidence of congenital heart disease in pregnant patient is steadily increasing, as greater number of women with congenital heart lesions reach child bearing age due to improvement in medical and surgical therapies.

Material and methods: 50 Pregnant women with cardiac disease were followed up during antenatal period, evaluated and maternal and fetal outcome was studied.

Results: Majority of the women belonged to age group between 21 to 30 years (78.33%). Majority of them belonged to NYHA class I and II (88.33%). The maternal and perinatal outcome was found to be good in these women. Rheumatic heart disease was the predominant cardiac disease (46.66%) followed by congenital heart disease (31.66%). The incidence of cardiac complications was 13.33% in this study, CCF/Pulmonary edema in 8.33%, arrhythmias in 3.33% and thromboembolism in 1.66% of cases. Maternal congenital heart disease was found as an independent risk factor for neonatal malformations (1.66%). Perinatal complications were observed in 17% of pregnancies.

KEYWORDS : Cardiac Disease, Pregnancy, Rheumatic Heart Disease, Congenital Heart Disease

Introduction:

Cardiac disease in developing countries remains an important cause of maternal mortality and morbidity. Approximately 1% of pregnancies are complicated by cardiac disease, and the management of these cases can challenge the entire team providing care to the mother and fetus[1]. Rheumatic heart disease, despite declining incidence among western population still accounts for most cases in the developing nations. However, the incidence of congenital heart disease in pregnant patient is steadily increasing, as greater number of women with congenital heart lesions reach child bearing age due to improvement in medical and surgical therapies.

Most women with cardiovascular disease can experience pregnancy with proper care, but a careful pre-pregnancy evaluation is mandatory. Sometimes, cardiac disease may manifest for the first time in pregnancy, because the hemodynamic changes may compromise a limited cardiac reserve. Conversely, the symptoms and signs of a normal pregnancy may mimic the presence of cardiac disease. Maternal mortality varies directly with functional class: 0.4 % for NYHA classes I and II, and 6.8% for classes III and IV. Fetal mortality is also greatly influenced by maternal functional class, varying from zero for class I to 30% for class IV[2,3]. Management of pregnancies complicated by heart diseases requires a multidisciplinary team approach, and the management should be tailored to the specific needs of the patient.

Aims:

- To study the prevalence of cardiac disease in pregnancy in JSS hospital
- To study different types of cardiac disease complicating pregnancy
- To evaluate maternal and fetal outcome in pregnancies complicated by cardiac disease

Material and methods:

The study was conducted in the Department of Obstetrics and Gynecology at JSS Hospital. Pregnant women with cardiac disease were followed up during antenatal period, evaluated and maternal and fetal outcome was studied. Data was collected in a predesigned proforma. The sample size for the study was kept at 50 and appropriate statistical methods were employed to tabulate the results. Ethical clearance was obtained from the ethical committee of our institution to carry out the present study.

Results:

In the present study of maternal and fetal outcome in pregnancies complicated by cardiac disease the following observations and results were noted and tabulated as below

Majority of the women belonged to age group between 21 to 30 years (78.33%), 11.66% were below 20 years while 10% of them were aged more than 30 years.

Table 1: Age distribution

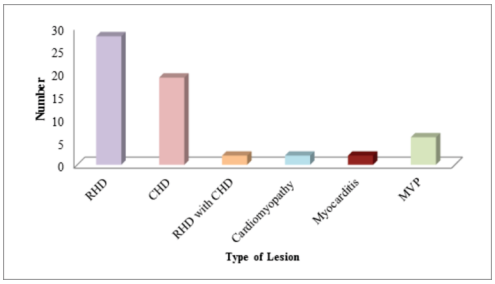
Age group (years)	No. of women
<20	7(11.66%)
21-30	47(78.33%)
>31	6(10.00%)

Table 2: NYHA functional grading

The pregnant women included in the study were assigned a base line NYHA grading of class I, class II, class III or class IV depending on the severity of underlying cardiac disease. Majority them belonged to NYHA class I and II (88.33%). The maternal and perinatal outcome was found to be good in these women.

Table 3: Maternal heart disease characteristics

Cardiac Lesions	Number
RHD	28(46.66%)
CHD	19(31.66%)
RHD with CHD	2(3.33%)
Cardiomyopathy	2(3.33%)
Myocarditis	2(3.33%)
MVP	6(10%)



The above table shows underlying cardiac conditions among the pregnant women included in this study. Rheumatic heart disease was the principal cardiac lesion (46.66%), while congenital heart disease (31.66%) was the second most common cause.

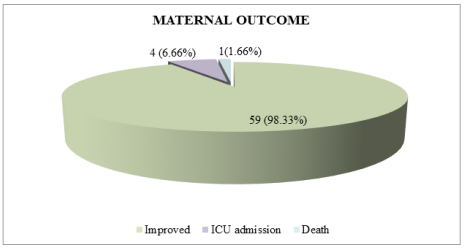
Table 4: Lesions in CHD

Lesions in CHD	Number	
	Corrected	Not Corrected
ASD	6	4
ASD+RHD	-	2
PDA+ASD	2	-
PS+ASD	1	-
EA+ASD	-	1
VSD	-	1
PDA+VSD	1	-
PDA	1	-
PS	1	-
BAV	1	-

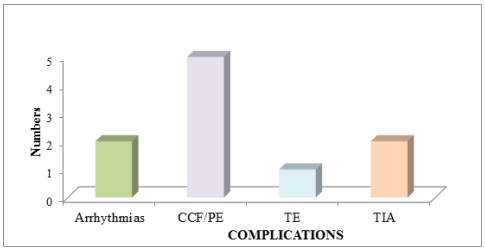
It was observed in the study that ASD was the most common congenital heart disease seen in 10 (52.63%) women followed by PDA with or without ASD/VSD in 3 (15.78%) women. 13 (68.42%) women with CHD had corrected lesions, while uncorrected lesions were found in 8 (31.57%) women.

Table 5: Lesions in RHD

Lesions in RHD	Number	
	Corrected	Not corrected
MS	3	12
MR	2	21
TR	-	5
AR	1	3
PR	-	3
Total	6	44



The predominant type of valvular lesion in women with RHD was MR (46%) followed by MS in 15 (30%) women. Many patients had a combination of the above conditions. MS with MR was found in 12 (24%) women.



The overall incidence of cardiac complications was 13.33% in this study, CCF/Pulmonary edema was seen in 5(8.33%) of cases, arrhythmias in 2(3.33%), Transient ischemic attack in 2 (3.33%) and thromboembolism was noted in 1(1.66%) of cases. One maternal death was documented due to cardiac complications (CCF and thromboembolism). Prophylactic antibiotics were used routinely and infective endocarditis did not occur in any of the subjects.The mean duration of stay in the hospital was 8 ± 3.97 days.Among 60 pregnancies 57 pregnancies were live term deliveries (95%), 1 IUD (1.66%) and 6 (10%) prematurity was observed. One of the neonate (1.66%) had congenital heart disease. 10 (16.66%) required NICU admissions. The mean birth weight of the babies was 2.8690 Kg ± 0.4992 (mean ± SD).

Maternal congenital heart disease was found as an independent risk factor for neonatal malformations (1.66%). Perinatal complications were observed in 17% of pregnancies.

Discussion:

Cardiac diseases complicate approximately 1-3% of pregnancies[4]. These women should be offered appropriate pre pregnancy counselling regarding the risk of pregnancy and neonatal outcome. The course of pregnancy as well as maternal and fetal morbidity and mortality are dependent on both the underlying defect and the functional maternal state.

In the presence of maternal heart disease, the circulatory changes of pregnancy may result in decomposition or death of the mother or fetus. Prior cardiac surgery may not be completely protective from pregnancy–related complications because hemodynamic and electrophysiological residua are common.

The prevalence of cardiac diseases in pregnancy ranges from 1 to 3%[4]. The total number of deliveries in our hospital during the study period was 3652 deliveries. In the present study the prevalence of cardiac disease was found to be 1.64%, which is comparable to the studies by Burlew BS et al[5] (1 %) and Datta Ray et al[6] (3.764%).

Majority of the women belonged to age group between 21 to 30 years (78.33 %).The above demographic distribution was similar to studies by Dutta Ray et al[6] .The mean age group among the study group was found to be 24.6 ± 4.30 years. The mean gestational age at delivery was 38.23 ± 3.24 weeks.

The pregnant women enrolled in the study were classified according to NYHA functional class I, II, III and IV. Majority of them belonged to NYHA class I and II (88.33%). The maternal and perinatal outcome was found to be good in these women. This finding is comparable to studies by D Prathiba et al[7] and Mc Faul et al[3]. Thus NYHA functional classification serves as a predictor of maternal and fetal outcome.

In the present study rheumatic heart disease was the predominant cardiac disease (46.66%) followed by congenital heart disease (31.66%), while 16.66% of cases were categorized as others which included MVP, Viral myocarditis etc. These results were comparable to studies by Walkiria et al[8] and Mc Faul et al[3].

Rheumatic heart disease is the predominant cardiac disease in developing countries while congenital heart disease is the most common cause in developed countries [4]. Nevertheless the incidence of congenital heart disease in developing countries is on the rise. Improving socioeconomic conditions and access to medical care has resulted in decreased incidence of rheumatic heart disease in developing countries.

The former ratio of RHD: CHD is reversed. The ratio of RHD: CHD in this study is 1.47 : 1 , which is similar to the study by D Pratibha et al[7] (1.91:1).

Cardiac complications documented in the present study include CCF/Pulmonary edema seen in 8.33% of cases, arrhythmias in 3.33%

and thromboembolism in 1.66% of cases. The above findings were comparable to studies by Willem Drenthen et al[9], Julie A et al[4], Khairy P et al[10] and D Pratibha et al[7].

The overall incidence of cardiac complications was 13.33% in this study which was similar to study by William Drenthen et al[9] and Samuel C siu et al[4] (13.33%).

There was one maternal death in our study. She was an unbooked case, presented at term, late in labour with signs of cardiac failure; she was diagnosed to have pulmonary thromboembolism due to mitral valvular lesion. She developed congestive cardiac failure (CCF). Despite anti failure measures and supportive therapy patient could not be saved. The incidence of maternal death in our study (1.66%) was comparable to studies by Julie A et al[4] and D Pratibha et al[7] (1.81%).

In the present study, out of 60 pregnancies, 48.33% women delivered vaginally which was predominant mode of delivery, while 43.33% underwent Caesarian section. Instrumental deliveries accounted for 5% of cases. Two abortions were documented (3.33%), one spontaneous abortion and other being MTP. Termination of pregnancy was carried out in view of fetal cardiac anomaly diagnosed by antenatal ultrasonogram. The above findings were found similar to studies by D Pratibha et al[7], Siu C Samuel et al[4] and D K Desai et al[11].

The overall perinatal outcome was good with live birth of 95%. One case of IUD and one neonatal death was observed bringing the perinatal mortality to 3.33%. Congenital heart disease was diagnosed through antenatal USG in one pregnancy (Double outlet right ventricle). The pregnancy was promptly terminated.

Maternal congenital heart disease was found as an independent risk factor for neonatal malformations (1.66%). Perinatal complications were observed in 17% of pregnancies.

The mean birth weight was found to be 2.8690 Kg ± 0.4992 (mean ± SD), this finding was similar to that of DK Desai et al[11] (2.6 kg) .These findings correlated to study by Datta Ray et al[6](8.63).

Conclusion:

The maternal and fetal mortality and morbidity are dependent on the type of underlying cardiac disease and NYHA grading. Thorough prenatal care and team approach can improve the maternal and fetal outcome. RHD is still the leading cause of maternal heart disease in developing countries, while the incidence of congenital heart disease is on the rise. The ratio of RHD: CHD is now reversing as a result of reduction in cases of RHD owing to the improved socio economic status, education and access to health care.

REFERENCES

1. Cunningham FG, Leveno KJ, Steven BL, Hanth JC, Rouse DJ, Spang CY, Williams Obstetrics 2014 24th edMcGraw Hill:973-99.
2. Perloff JK. PREGNANCY IN CONGENITAL HEART DISEASE: THE MOTHER AND THE FETUS. Philadelphia, Pennsylvania: WB Saunders; 1991:124-139
3. McFaul PB, Dornan JC, Lamki H, Boyle D. PREGNANCY COMPLICATED BY MATERNAL HEART DISEASE. A review of 519 women. Br J Obstet Gynaecol. 1988;95:861-867
4. Julie Arafeh RN, Yasser Y El Sayed: CARDIAC DISEASE IN PREGNANCY. NeoReviews. 2004; 5(6):232.
5. Burlew BS. MANAGING THE PREGNANT PATIENT WITH HEART DISEASE. Clin Cardiol .1990; 13: 757-62
6. Dutta Ray Chaitali , Saumandal Bijay Kumar: OUTCOME OF PREGNANCY AFTER CARDIAC SURGERY- A COMPARATIVE ANALYSIS. J Obstet Gynecol Ind. 2004; 54 (6): 556-560.
7. Devabhaktuni Pratibha, Yarlagadda Srilakshmi, Devineni Kiranmai, Gogineni Swathi: PREGNANCY IN CASES OF CONGENITAL HEART DISEASE. J Obstet Gynecol India . 2010;60(1):33-37
8. Walkiria Samuel Avila, Eduardo Giusti Rossi, et al : PREGNANCY IN PATIENTS WITH HEART DISEASE: EXPERIENCE WITH 1,000 CASES. Clinical Cardiology. 2006;26(3):135-142.
9. Willem Drenthen, Petronella G Pieper et al: OUTCOME OF PREGNANCY IN WOMEN WITH CONGENITAL HEART DISEASE. J Am Coll Cardiol.2007; 49: 2303-2311
10. Khairy P, Ouyang DW, Fernandes SM et al: PREGNANCY OUTCOME IN WOMEN WITH CONGENITAL HEART DISEASE. Circulation .2006; 113: 517-24.
11. Desai DK, M Adanlawo et al: MITRAL STENOSIS IN PREGNANCY: A FOUR YEAR EXPERIENCE AT KING EDWARD VIII HOSPITAL, DURBAN , SOUTH AFRICA. Br J Obstet Gynaecol. 2005; 107(8):953-958.