

Original Research Paper

Study on impact of Rheumatic Heart Disease in Pregnancy

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ABSTRACT

INTRODUCTION:

Cardiac disease in pregnancy is a high-risk pregnancy, which poses a significant challenge to treating obstetrician and other health care providers. We, therefore retrospectively examined the frequency of pregnancy-related complications in Indian women with Rheumatic Heart Disease. **MATERIAL AND METHODS:** A retrospective study was done in MGMC, Jaipur from October 2020 to September 2021 in order to evaluate the prevalence of Rheumatic Heart disease in pregnancy and its maternal and fetal outcomes. **RESULT AND OBSERVATION:** Out of 2378 deliveries 90 patients had Rheumatic Heart Disease (3.78%). Maximum patients belonged to age group of 26-30 years (40%) and lower middle SES (67.7%). Most patients were primigravida (48.8%) with gestational age 37-40weeks (56.5%). Most common lesion in RHD was found to be Mitral valve stenosis (46.6%) while the most common cardiac complication was CCF (33.3%). Other complications included anaemia (18.8%), PIH (25%) and 13.3% went to ICU. 61.2% delivered vaginally and 38.8% were LSCS. Preterm birth (43.3%) was most common neonatal complication. **CONCLUSION:** Prognosis of pregnant women with Rheumatic Heart Disease has improved, thereby decreasing fetomaternal morbidity and mortality. We therefore stress the need to monitor cardiac patient for early detection and management of heart failure throughout the course of pregnancy, labor and puerperium.

INTRODUCTION

Rheumatic heart disease (RHD) in pregnancy is a high-risk pregnancy, which poses significant challenge to treating obstetricians and other health care providers.^[1] There are two groups of cardiac diseases in women of childbearing age: Congenital and acquired heart disease. The acquired heart disease group comprises rheumatic heart disease (RHD), cardiomyopathies, and ischemic heart disease. Of these, RHD is known as the most common type in developing countries, while cardiomyopathies and congenital heart disease (CHD) are the main types in developed countries.^[2] In India, RHD contributes to approximately 69% of cardiac disorders seen in pregnancy, and most cases present as mixed mitral valve disease.^[2] RHD in pregnancy is associated with an increased burden of maternal and perinatal morbidity and mortality.^[3,4] RHD is twice as common in women, which is a sequelae of rheumatic fever resulting in heart valve

damage if left untreated. The pregnant patient with RHD faces significant risks, including an increased risk for exacerbation of primary disease, acute cardiovascular decompensation, stroke, heart failure, arrhythmia, premature delivery, and death^[5] and the baby is at an increased likelihood of stillbirth, preterm birth and acquired congenital disease.^[6] Mitral stenosis is the most common valvular lesion in women with rheumatic heart disease, remains the most common acquired valvular lesion in pregnant women and the most common cause of maternal death from cardiac causes.^[7] In the second and third trimesters, when maternal blood volume and cardiac output peak, heart failure may occur in pregnant women with moderate or severe mitral stenosis, even in previously asymptomatic women.^[8] The advancement in cardiology and obstetrics has provided major improvements in the management of pregnant patients with such defects. Now we are facing more women with

a previous history of surgical correction of rheumatic heart disease.^[9] The burden of RHD in pregnancy is under-researched; the majority of studies examine severe disease in non-pregnant adults, all-cardiac disease in pregnancy or single-site studies.^[10,11,12] We therefore retrospectively examined the frequency of pregnancy-related complications in Indian women with rheumatic heart disease to provide contemporary information on the impact of RHD on maternal and fetal mortality and morbidity and to identify the clinical pattern and outcomes of these patients in order to improve prevention, diagnosis, management and their outcomes as an ultimate goal.

MATERIAL AND METHODS

A retrospective hospital based study was done in MGMC, Jaipur from October 2020 to September 2021 in order to evaluate the incidence of rheumatic heart disease in pregnancy and its maternal and fetal outcome.

Analysis of all pregnant patients admitted with rheumatic heart disease over a one-year period was performed. We

included all the pregnant and post-partum women with rheumatic heart disease who delivered during this time period in order to evaluate the prevalence and to study the maternal and fetal outcome of rheumatic heart disease in pregnancy.

Information was retrieved from previous medical records and files obtained from the medical record department with due permission which included demographic details, diagnosis, surgery performed pre-pregnancy and during pregnancy, and data on maternal and fetal outcomes. Maternal outcome was analyzed using the following criteria: severity of disease, cardiac complications, non-cardiac complications, and mode of delivery. Neonatal outcome was analyzed using the following criteria: time of delivery, birth weight, stillbirth, congenital abnormalities. The data were collected in a structured format coded and entered into Microsoft Excel spreadsheet and analyzed using appropriate tests.

RESULTS

Table 1 –Incidence of RHD in pregnancy

<u>TOTAL NUMBER OF DELIVERIES</u>	2378
<u>NUMBER OF CASES WITH RHD</u>	90
<u>INCIDENCE</u>	3.78 %

A total of 90 women where pregnancy was complicated by rheumatic heart disease were included in the study.

Prevalence of RHD amongst all pregnancies found in the hospital was 3.78%.

Table 2 – Maternal Characteristics

CHARACTERISTICS	Number of patients	Percentage
1)AGE		
18-20	16	17.7
21-25	31	34.4
26-30	36	40
31-35	7	7.7
2)SOCIOECONOMIC STATUS		
Upper	10	11.1
Upper Middle	19	21.1
Lower Middle	32	35.5
Lower	29	32.2
3)Parity		
Primiparity	44	48.8
Gravida 2	27	30
Gravida 3 or more	19	21.1
2) Gestational Age		
28-32	21	23.3
33-36	18	20
37-40	41	45.5
>40	10	11.1

The age of patients was ranged from 18-35 years with maximum number of patients in 20-30 years age group (74.4%) and most of the patients belonged to lower middle and lower socioeconomic status (67.7%)

In this study, most of the patients were Primiparity (48.8%) and majority were term gestation (56.5%).

Table 4 –Type of Rheumatic heart disease

Rheumatic Heart Disease		
MS only	42	46.6
MR only	9	10
MS+MR	8	8.8
AR	2	2.2
AS	10	11.1
TR	2	2.2
Multiple Valve lesion	17	18.8

Among the women who had Rheumatic heart disease, Mitral Valve stenosis was the most common lesion, seen in 46.6% of patients with RHD while MR was seen in

10%. Multiple cardiac lesions were present in 18.8 % of women.

Table 5 – Maternal Complication

<u>COMPLICATION</u>	<u>Number of patients</u>	<u>Percentage</u>
1)CARDIAC	15	16.6
CCF	5	33.3
Pulmonary Edema	4	26.6
PAH	3	20
AF	3	20
2)OBSTETRIC	32	35.5
Anemia	6	18.8
Thrombocytopenia	2	6.2
PIH	8	25
Pre Eclampsia	3	9.4
Abruptio	4	12.5
PPH	5	15.6
Wound Infection	4	12.5
3) ICU admissions	12	13.3
4) Maternal mortality	0	0

Although there were no maternal deaths during the study period, a significant number of cardiac and non-cardiac complications were encountered. Cardiac complications occurred in 15 (16.6%) patients and were mainly related to rhythm disturbances and heart failure. The most

common cardiac complication was CCF seen in 5 patients. Obstetric complications were noticed in 32 patients most common being anemia and 12 patients (13.3%) required ICU care.

Table 6 – Mode of delivery

<u>Mode of delivery</u>	<u>Number of patients</u>	<u>Percentage</u>
1)VAGINAL	55	61.2
Spontaneous	43	78.2
Induced	12	21.8
2) Caesarean section	35	38.8
Elective	22	62.8
Emergency	13	37.2

Most of the patients had vaginal delivery (61.2%) and cesarean section was seen in 38.8% patients. The labor was of spontaneous onset in 43 and induced in 12 cases. The indication for induction was mostly post-dated

pregnancy and severe pre-eclampsia. The various indications for LSCS were fetal distress, cephalopelvic disproportion, malpresentations etc.

Table 7 – Neonatal Outcome

Neonatal Outcome	Number of patients	Percentage
IUGR	8	8.8
Preterm	39	43.3
Still Birth	1	1.11
Neonatal mortality	1	1.11
IUD	3	3.33
Birth Asphyxia	2	2.22
Low Apgar	8	8.88
Meconium Aspiratipon	8	8.88
NICU admission	16	17.7

Among all the babies born alive none had congenital heart disease.

Prematurity was the most common neonatal complication seen in 43.3% of babies, Growth retardation was seen in 8.8% of babies and the other neonatal complications are shown in Table 7.

A total of 16 babies required NICU care and the various indications are shown in Table 7. There were 3 IUD deliveries and 2 perinatal deaths, of which one was fresh stillborn and one was neonatal death (3 days after birth).

DISCUSSION

This study was conducted in the Department of Obstetrics and Gynaecology, MGMCH, Jaipur in total of 90 women. In the present study we determined the prevalence of heart disease in pregnancy, type of cardiac lesion and assessed the maternal and fetal outcomes in pregnant women with heart disease. Various studies estimated that 0.3% to 3.5% of all pregnancies are complicated by heart disease. In the present study, the prevalence of 3.78% was found which was same as that of the study conducted by Puri S et al.^[13] Pujitha KS^[14] found incidence as 0.21% in their study. Low incidence was mostly because it was a referral center and high incidence in our study is due to the fact that our hospital is a tertiary care centre. In the current study, majority of the patients were in the age group of 20-30 years (74.4%) and most of them were either primigravidae or primipara (48.8%). This was comparable to Salam S et al.^[15] where 74.5% were below 30 years and 60% were primipara. Most of them belonged to low socioeconomic status (67.7%). Of all the pregnant patients who had rheumatic heart disease, Mitral Stenosis was the most common lesion (46.6%)^[15, 16,17,18]. The explanation for this can be due to the lack of preventive treatment and inadequate use of secondary antibiotic prophylaxis against streptococcal infections. These results were in

consensus with Salam et al Vidyadharet al, Mazhar SB et al, Devabhaktula et al, and N Bhatla et al.^[15, 19, 20,21, 22] Out of 90 pregnant women in the present study group 35.9% underwent surgical intervention for cardiac disease. The results were comparable with studies conducted by Pujitha KS et al^[14] and Bhatla et al^[19]. Most common procedure was Mitral valve replacement (42.8%) followed by double valve replacement (28.6%) 3 patients underwent cardiac surgery Balloon Valvoplasty during pregnancy due to severe MS. In general, cardiac surgery is avoided during pregnancy because it carries a significant risk of foetal mortality and morbidity as a result of possible teratogenic effects of drugs during anaesthesia, disturbances in uteroplacental blood flow and embolic events to the uteroplacental circulation. There was a high rate of cardiac and non cardiac complications related to RHD in this study (16.6%), the most common being congestive cardiac failures which was consistent with Joshi's study, which reported that heart failure was considered as a common complication among 42 women with cardiac disease.^[17] While studying the mode of delivery most patients delivered vaginally out of which 10 patients had instrumental vaginal delivery to cut short the second stage of labor. In this study, 55 (61.2%) women had vaginal delivery as compared to 65.3 % (Manohar Rangaswamy et al) 35.6% (salam S et al.) Cesarean Section (38.8%) was done only for obstetrical indications. Manohar Rangaswamy et al reported 34.6% Salam S et al. reported in 36.7%^[15, 23] In the present study we had 16 NICU admissions, due to birth asphyxia, IUGR and preterm birth. We had found two perinatal mortality, due to prematurity and respiratory distress syndrome. Results were comparable with Pujitha KS and Prameela et al.^[14, 24]

CONCLUSION

Rheumatic heart disease in pregnancy is the most common heart disease in pregnancy which has adverse affects on both mother and fetus. This study revealed that Mitral stenosis was the most common lesion seen among patients affected by RHD which is concurrent with the latest studies. Our data supports the fact that proper evaluation of patients affected by RHD prior to conception and adequate follow up during pregnancy is necessary for obtaining a satisfactory outcome of mother and child. Therefore there is a need for early detection and management of Rheumatic Heart disease throughout pregnancy, labor and puerperium.

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