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Heart Disease and its Consequence in Pregnancy

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Abstract:

The aim of the study is to evaluate the types of heart disease common in our pregnant woman and to assess its influence on the maternal outcome. This was a prospective observational study. The study was carried out in the department of obstetrics & Gynecology in BSMMU from Jan 2006 to Dec 2006. Thirty-five consecutive cases with heart diseases were included in the study.

Out of 35 Cases, 26(74.3%) were suffering from rheumatic heart diseases and only 9 (25.7%) patients were suffering from congenital heart disease. Based on New York heart Association (NYHA) functional classification, 28(80%) belonged to NYHA class I, 5 (71.212%) belonged to NYHA class II and 2(28.57%) belonged to class III heart disease on presentation. The number of caeserian section was 33(94.28%) and normal vaginal delivery (5.71%). In this study only 1 woman of NYHA III disease expired.

Introduction:

The main problem encountered in a pregnant women with heart disease arises from complications of already existing chronic disorder like rheumatic and congenital heart lesions and hypertensive cardiovascular disease.[1] Cardiovascular disease is the most important non obstetric cause of disability and death occurring in pregnancy.[2]

The most dominant rheumatic lesions have been mitral stenosis (80%) followed by aortic stenosis (10%) mitral regurgitation (6.6%) and aortic regurgitation (2.5%).[2] The improvement in cardiovascular surgery has improved the prognosis of congenital lesions and many women even with defects are now reaching the child bearing age. The commonest cardiac lesion during pregnancy is of rheumatic origin followed by congenital one.[3] Pregnant woman with valvular heart disease should be managed by high risk obstetric service which provides cardiology consultation, close obstetric supervision and provision of delivery with haemodynamic monitoring when required.

If a woman with heart disease presents for medical care after she has become pregnant, the obstetrician must recognize the presence of preexisting cardiac disease, assess the degree of disability and understand the impact of the added haemodynamic changes of pregnancy. A team should carry out management of an obstetric patient with heart disease consisting of an obstetrician, cardiologist and anesthesiologist. Mortality due to heart disease can be preventable and is largely dependent on timely interference.[5] Rheumatic heart disease is still the leading causes of death due to heart disease in young woman in the developing world.[4]

The purpose of this study was to analyse the outcome of pregnant woman with heart disease.

Materials and Methods:

This prospective observational study was carried out from January 2006 to December 2006 in the obstetrics & Gynecology department of BSMMU. Thirty five consecutive patients with heart disease, either booked or non booked cases, who were admitted in fetomaternal medicine unit of BSMMU during study period, were recruited. After having informed consent, the pregnant patients with rheumatic heart disease and with congenital heart disease were included in the study while the patients having heart disease with other medical disorder were excluded.

Relevant history was taken from the patient and from the attendants after admission. Patients were classified according to the type of heart disease. Assessment of functional grading of heart disease was done depending on her clinical symptom according to the criteria of New York Heart association (NYHA). For confirmation of diagnoses patients were evaluated by both cardiologist and obstetricians. An investigation including ECG and echocardiography was done in all cases. Gestational age was calculated from the last menstrual period, clinical examination and early ultra sonogram report. In most of the cases, the mode of delivery was elective caeserian

section and the patients were evaluated by both cardiologist and a anesthesiologist during pre operative , intra operative & post operative period.These patients, who went into labuor spontaneously, were allowed to vaginal delivery under supervision of these cardiac status. All the information was gathered in a preformed data sheet.

Results:

Regarding classification of heart disease 26 (74.3%) women were suffering from rheumatic heart disease, while the rest 9(25.7%) were suffering from congenital heart disease . Among the rheumatic heart disease patients most (53.9%) were suffering from mitral stenosis and the rest (46.1%) had mitral stenosis with other valvular heart disease (table 1). Table 2 shows that, among the study patients, 9 (25.7%) woman had history of cardiac surgery prior to the present pregnancy and the 26 (74.2%) woman had no such history.

The types of cardiac surgery were closed mitral commisurotory 6(17.14%) & repair of ASD 2 (5.71%) & repair of VSD 1 (2.8%).

Table-I

Type of heart disease (n-35)

Diagnosis	Number of patients	Percentage
Rheumatic	26	74.3
Mitral stenosis	14	53.9
Mitral regargitation	05	19.5
Mitral stenosis+Mitral regargitation	04	15.4
Mitral stenosis+Aortic regargitation	01	3.8
Mitral stenosis +Pulmonary hypertension	01	3.8
Congenital	09	25.7
Ventriculer septel defect	03	33.3
TOF	01	11.2
Atrial septal defect	05	55.6

Table – ll

History of cardiac surgery prior to pregnancy (n- 35).

History of cardiac surgery	Number of patients	Percentage
Present	09	25.7
Absent	26	74.2

Table –lll

Distribution of the patients according to NYHA class (n= 35).

NYHA Class	Number of patients	Percentage
Class l	28	80.0
Class ll	05	14.28
Class lll	02	5.7
Class lV	00	0.0

Regarding class of heart disease, 28 (80.0%) woman belonged to class I 5(14.28%) belonged to class II and 2(5.7%) belonged to class III heart disease None of them belonged to class IV.

Table IV

Maternal outcome (n= 35)

Functional grading	Symptomatic (n=7)	Heart Failure (days)	Hospital Stay (%)
NYHA	No (%	Mean(±SD)	No(%)
Class I (n=28)	0	6.44±3.12	03
Class lI (n=05)	5(71.42%)	8.67±3.29	0
Class llI (n=02)	2(28.57%)	11±1.41	1(50.0)

Table IV shows that symptomatic heart failure was present in 7 woman, 5(71.42%) belonged to NYHA class II and 2 (28.57%) belonged to class III.

Mean (± SD) hospital stay was 6.44 ± 3.12 days for class I patients, 8.67 ± 3.24 days for class II patients and 11 ± 1.41 days for class III patients. Out of 35 woman, Only I of class III heart disease expired. She was a case of Eisenmenger's syndrome. Patient died on 7th POD due to thromboembolism.

Table –V

Time of onset of heart failure (n=7).

Time of onset	Number of patients	Percentage
During labour	4	57.14
Antenatal period	3	42.86

Table V shows that out of 7 woman who developed symptomatic heart failure 4 (57.14) developed during labour and 3 (42.86%) during antenatal period.

Discussion:

Pregnancy is one of physiological condition that places a considerable burden on heart, forcing it to work harder for

a significantly long period for nine month. While a normal heart is quite capable of taking this extra load but a diseased one may not be able to cope with extra load.

Cardiac disease in pregnancy is a cause for concern and is an important recognized cause of maternal death.[6,7] In Western countries a progressive decline has been noticed in the incidence of rheumatic heart disease; however such a trend has not been noticed in our country.

During the study period (January 2006 to December 2006) 35 consecutive patients with heart disease were included. Among them 26 (74.31%0) patients had rheumatic heart disease and most common lesion was mitral stenosis (53.9%).Congenital lesion was present in 9 (25.7%) patients.

A study done by Sawhoey et al[8] showed that rheumatic valvular disease was 68.5 percent and congenital valvular disease was 31.5 percent. Mitral stenosis was the most common rheumatic valvular lesion and atrial septal defect was most common congenital lesion.

A similar study by MC Foal[9] and doman showed that majority had rheumatic origin and mitral stenosis was the common lesion.

Among congenital one, atrial septal defect was common. Therefore the present study finding was consistent with other study reports.

In this series 09 out of 35 patients (25.7%) had their lesions surgically corrected. A study done by Heisle et al[11] showed that 27 percent patients had surgically corrected lesions. The result of this study is consistent with the findings of Heishs et al.

In this study, 80.0% patients were in NYHA class 1, 14.28 patients in NYHA class II.

A study done by Hameed et al[12] showed that 28 (80%) patients were in class IV (14.28%) in class II and 2(5.7%0 in class III. Heart failure developed in 7 patients, among them .5 patients were in NYHA class II and 2 patients class III

Another study done by Hameed et al[12] showed that 95.4 patients belonged to NYHA class l and II and 4.8 percent in NYHA class III on presentation.

Regarding maternal outcome of pregnancy patients with valvular heart disease, 28 (80.0%) patients were in NYHA class l, 5(14.28%) in class II and 02(5.7%) in class III on admission. Symptomatic heart failure developed in 7 woman. Among them 5 patients belonged to class II and 2 patients in class III.

Mean hospital stay was 6.44±3.12 days for class l patients, 8.67±3.29 days for class II patients. Out of 35 women only l patient with class III heart disease expired. She was a case of Eisenmenger's syndrome and died on her 7th post operative day. This patient developed respiratory distress on her 1st POD and then referred to ICU from where she returned on 6th POD with improvement but deteriorated again and died suddenly due to pulmonary embolism.

In this study, pregnancy was contraindicated in the patient who expired. She was a young primigravid, non booked case, who was counselled for termination of pregnancy by obstetricians in early pregnancy. But she continued it, received irregular antenatal care with no anticoagulant therapy through out the pregnancy and also in puerperium. The management of this case should be multidisciplinary to optimize care for these patients throughout pregnancy and in the puerperium and early risk stratification should be done to improve the prognosis of pregnancy in woman with heart disease.

Conclusion:

High risk pregnant patients with CVD should be managed by multidisciplinary team from the very beginning to improve maternal outcome.

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