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Clinical Presentation & Management of Pregnancy with Heart Disease

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Abstract **Original Research Article**

Background: Pregnancy with normal heart has got enough reserve power so that the extra load can be well tolerated. While a damaged heart with good reserve can even withstand the strain, but if the reserve is poor, cardiac failure occurs sooner or later which may result in both maternal and neonatal morbidity and even mortality can occur. ***Methods:*** Current cross sectional study is conducted in Obstetric and Gynae department of Dhaka Medical College Hospital to assess the Clinical presentation, management and outcome of pregnancy among pregnant women with heart disease. A total of fifty pregnant women with various grade of cardiac problem were included in the study. ***Results:*** Majority of pregnant mother with heart disease availed ANC and were using contraceptive methods. Among them barrier methods were most preferred. Most of the mothers had previous history of rheumatic disease and took medical treatment and few of them took surgical treatment too. Heart failure were developed in around one fourth of the mothers with heart disease around half (45%) developed heart failure in course of current pregnancy, around one third (37%) had it before pregnancy and 8% had it since previous pregnancy. Regarding pattern of presentation 32% had peripheral oedema, 2.0% had generalized oedema, 20% had lung oedema, 4.7% had cyanosis and 12.8% had engorged neck-vein. Among the mothers 76% consulted cardiologists before delivery. More than half (51.1%) the mother had LUCS and 23.4% had NVD. During the peri natal period 15.0 % had pre-eclampsia and 7.0 % had post-partum haemorrhage. Around 36% of the mothers were referred to cardiology, 6% were immediately transferred to Cardiology and 6% died. Regarding foetal outcome, 9.5% had IUGR, 7.1% % died during gestation and 4.8 % died after delivery. ***Conclusion:*** Heart disease in pregnancy Is a grave condition may result in severe maternal and foetal complication and result in adverse outcome of pregnancy like fetal loss.

Keywords: Neonatal morbidity, rheumatic disease, generalised oedema.

INTRODUCTION

Cardiovascular disease is the most important non obstetric cause of disability and death in pregnant women, occurring in 0.4-4% of pregnancies. The reported maternal mortality rate ranges from 0.4% in patients with New York Heart Association classification I and II to 6.8% or higher among patients with grade III and IV severity. Improvement in diagnosis, medical management, surgical correction of congenital & rheumatic heart disease-lead to an increasing number of women with heart disease reaching child bearing age. Now a day, pregnancy with heart disease not a common problem in developed countries, but it reaches a high prevalence in developing countries.

Pregnancy places a considerable strain on the heart & circulation & necessitates marked cardio-respiratory adaptation. Heart disorders account for about 10% of maternal obstetric deaths. In the US, because incidence of rheumatic heart disease has markedly declined, most heart problems during pregnancy result from congenital heart disease. Pregnancy is inadvisable for women with certain high-risk disorders (eg, pulmonary hypertension, severe valvular disorders, prior postpartum cardiom yopat hy) [1].

Pregnancy stresses the cardiovascular system, often worsening known heart disorders; mild heart disorders may first become evident during pregnancy. Stresses include decreased Hb and increased blood

volume, stroke volume, and eventually heart rate. Cardiac output Increases by 30 to 50%. These changes become maximal between 28 and 34 wk gestation. During labour, cardiac output increases about 20% with each uterine contraction; other stresses Include straining during the 2nd stage of labour and the increase in venous blood returning to the heart from the contracting uterus. Cardiovascular stresses do not return to prepregnancy levels until several weeks after delivery [2].

As the Dhaka Medical College Hospital is a tertiary level hospital both the booked & non-booked cases of pregnancy with heart disease admit in this hospital as an obstetric emergency. In last five years, total number of patient with pregnancy with heart disease admitted into DMCH was 156; total maternal death (due to heart disease) was 16. The proposed study is aimed at asses the clinical presentation & management of pregnancy with heart disease [3].

Cardiac diseases complicate 1% to 4% of pregnancies in women without preexisting cardiac abnormalities [4]. A working knowledge of the normal physiology of pregnancy is often helpful in the management of patients with heart disease [5]. Patients with preexisting cardiac lesions should be counseled in advance about the risk of pregnancy. Familiarity with the treatment of commonly encountered cardiac diseases during pregnancy is becoming increasingly important [6].

OBJECTIVES

General:

To assess the pattern of clinical presentation, management and outcome of pregnancy with heart disease.

Specific:

- To assess the pattern of presentation of pregnancy with heart disease.
- To assess the management of pregnancy with heart disease.
- To assess the outcome of pregnancy with heart disease.
- To assess the maternal and fetal complication in pregnancy with heart disease.

METHODOLOGY

Study Design:

The study was a descriptive type of cross-sectional study.

Duration of the study:

The study was undertaken between the periods of July 2006 to June 2007.

Place of the study:

The study was carried out in Dhaka Medical College Hospital, department of Obstetrics and Gynaecology.

Sample size

Fifty cases of pregnant women with cardiac problem, who were present during the period, were studied.

Sampling Technique:

In the study, sampling was done by purposive sampling.

Selection of the patient:

Inclusion criteria:

- The patients who fulfilled the following criteria were selected for this study.
- Patients having clinically diagnosed cardiac problem with pregnancy and admitted in the respective hospital for treatment.

Exclusion criteria: The following subjects were excluded from the study.

- Having other medical problem.
- Patients who were not willing to give informed consent.

Research Instruments and tools

A structured data collection sheet was designed for the purpose of the study.

Data collection procedure

After taking consent, data were collected from primary source through face to face interview and medical checklist.

Statistical analysis of data

Data Processing

All the data collected were meticulously checked and verified to reduce errors. The data was then presented manually in tabulated forms.

Data Analysis

These were finally analyzed using both descriptive and inferential statistics by computer software devised as a statistical package for social scientists (SPSS). The results were presented in tables, figures, diagrams.

RESULTS

Table-1: Distribution of the respondents by age, parity, occupation and socioeconomic status

Variables	Frequency (N=50)	Percent (%)
Age		
< 20 years	11	22.0
21 - 25 years	11	22.0
26 - 30 years	19	38.0
31 - 35 years	06	12.0
> 35 years	03	06.0
Parity		
0 parity	14	28.0
1-2 parity	27	54.0
>2 parity	09	18.0
Occupation		
Housewife	44	88.0
Student	02	04.0
Service	04	08.0
Socioeconomic status		
Lower	25	50.0
Middle	23	46.0
Higher	02	04.0

Table-1 shows that maximum respondents (38%) were in the age group of 26-30 years. Among the pregnant women 22% in the age group of <20 and another 20% were aged between 21-25 years. Majority of the respondents (54%) had parity between 1 and 2, 28% were nulliparous and 18% respondents had parity more than 2. By occupation most of them were house wife followed by 8% were service holder and only 4% respondent were student. Regarding socioeconomic status, half of the respondents were lower class, 46% were middle class and only 4% respondents were from higher class.

Table-2: Distribution of the respondents by abortion, gravida, admission status and contraception

Variables	Frequency	Percent (%)
Abortion (n=50)		
Yes	07	14.0
No	43	86.0
Gravida (n=50)		
Primi	11	22.0
Multi	39	78.0
Admission status(n=50)		
In labor	19	38.0
Not in labor	31	62.0
History of ANC (n=50)		
Yes	32	64.0
No	18	36.0
Use of Contraceptives(n=50)		
Depot injection	02	20.0
Barrier	05	50.0
Pill	03	30.0

Table-2 shows that 14% of the respondents have history of abortion. Regarding gravida, majority of the respondents (78%) were multigravida and 22% were primigravida. During admission, 38% of the respondents were in labor and 62% were not in labor. Majority of the respondents (64%) were found to receive ANC services. About contraception, most of the respondents (80%) were found to use contraceptives and among the users half used barrier methods followed by 30% used pill and 20% used depot injection for contraception.

Table-3: Distribution of the respondents by duration of suffering, history of rheumatic fever, and type of treatment

Variables	Frequency (n=50)	Percent (%)
Duration of suffering heart disease		
< 1 year	09	18.0
2 - 5 years	15	30.0
6 - 10 years	24	48.0
> 10 years	02	04.0
History of rheumatic fever (n=5O)		
Yes	34	68.0
No	16	32.0
History of treatment (n=5O)		
Yes	34	68.0
No	16	32.0
Type of treatment(n=34)		
Medical treatment	26	77.1
Surgical treatment	07	20.0
Both	01	02.9

Table-3 shows that maximum respondent's (48%) suffering for 6-10 years followed by 30% for 2-5 years, 18% for <1 year and only 4% respondent's suffering duration was >10 years. Regarding rheumatic fever and its treatment, majority of the respondents (68%) had previous history of rheumatic disease and same number of them took treatment. Among them majority (77.1%) took medical treatment followed by 20% took surgical treatment. Only 2.9% took both medical and surgical treatment.

Table-4: Distribution of the respondents by history of heart failure

History of heart failure	Frequency (n=50)	Percent (%)
Yes	37	74.0
No	13	26.0
Total	50	100.0

Table-4 shows that 74% of the respondents had the history of heart failure.

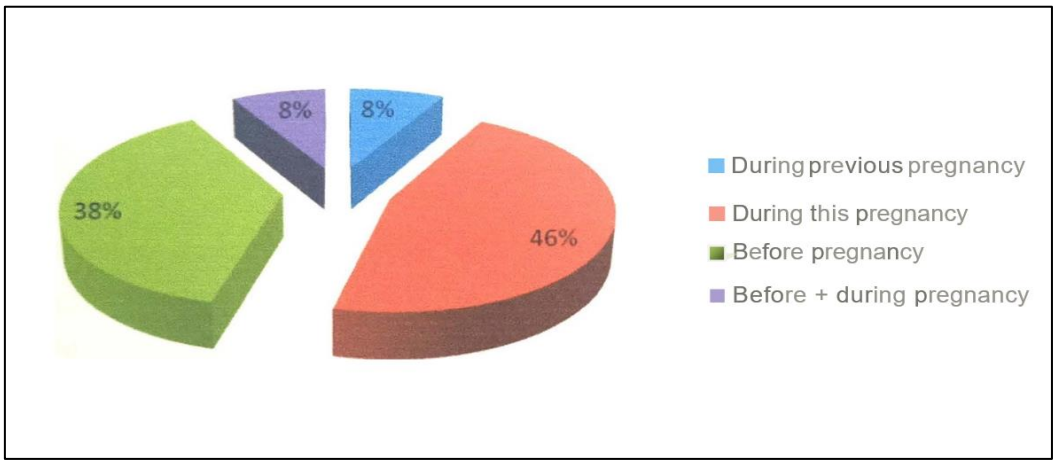

Figure 1: Timing of heart failure

Among those who developed heart failure, 45% had the event during current pregnancy, 37% had during before pregnancy and 8% had during previous pregnancy and another 8% had both before and during pregnancy.

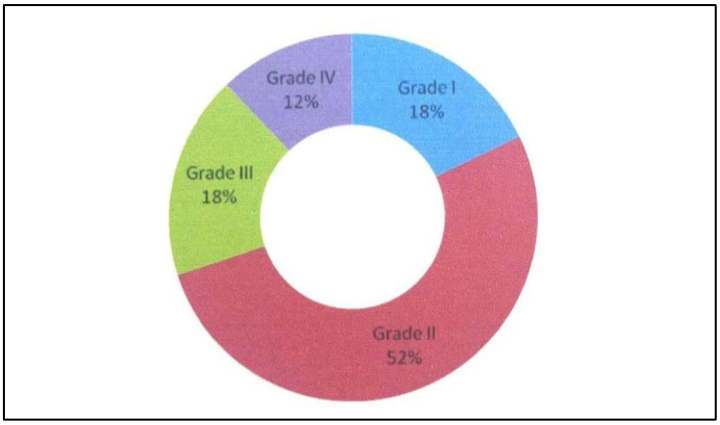

Figure 2: Distribution of the respondents by grading of cardiac disease. N=50
Grading of cardiac disease

The chart shows that majority of the respondents (52%) had grade II car diac disease, 18% had both grade I and III and 12% respondents had grade IV cardiac disease.

Table-5: Distribution of the respondents by peripheral oedema, generalised oedema and lung oedema

Variables	Frequency (n=50)	Percent (%)
Peripheral oedema	16	41.02
Present	23	58.97
Absent	39	100
Generalized oedema		
Present	01	04.17
Absent	23	95.83
Total	24	100
Lung oedema		
Present	10	23.81
Absent	32	76.19
Total	42	100

Table-5 Regarding clinical signs 41.0% respondents have peripheral oedema, 4.17% and generalised oedema and around 24% had lung oedema.

Table-6: Distribution of the respondents by Obstetric management

Obstetric management	Frequency	Percent (%)
Conservative treatment	08	17.0
NVD	12	25.5
Assisted vaginal delivery	03	06.4
LUCS	25	53.2
Total	47	100.0

Table 6 shows the distribution of the respondents by shows the distribution of the respondents by Obstetric management. Among the respondents 17.0% had Conservative treatment, 25.5% had NVD, 6.4% had assisted vaginal delivery, and 51.1% had LUCS.

Table-7: Distribution of the respondents by time of developing complications

Period of complications	Frequency	Percent (%)
Antenatal	20	51.3
Intrapartum	04	10.3
Postnatal period	01	02.6
Antenatal + intrapartum	02	05.1
Throughout perinatal period	04	10.3
Antenatal + postnatal	04	10.3
None	04	10.3
Total	39	100

Table 8: Distribution of the respondents by maternal outcome

Maternal outcome	Frequency	Percent (%)
Discharge with good cardiac status	25	50
Discharge with referral to cardiology	18	36
Transfer to Cardiology	03	06
DORB	01	02
Death	03	
Total	50	100

Table 8 shows the distribution of the respondents by maternal outcome of treatment. 25 of them were discharged with good cardiac status, 18 of them were discharge with referral to cardiology. 3 were immediately transferred to Cardiology, 1 had DOPJ3 and 3 died.

DISCUSSION

Pregnancy places a considerable strain on the heart & circulation & necessitates marked cardio-respiratory adaptation [7]. A normal heart has got enough reserve power so that the extra load can be well tolerated. While a damaged heart with good reserve can even withstand the strain, but if the reserve is poor, cardiac failure occurs sooner or later. However, both maternal & perinatal morbidity & mortality of baby is higher in comparison with pregnancy with heart disease than pregnancy of a healthy woman [8]. Heart failure, thrombo-embolic manifestations, disorders of rate & rhythm of conduction, infection-leading to infective endocarditis, cardiomyopathy etc are the contributing factors of maternal morbidity & mortality. Current study attempted to assess the presentation management and outcome of treatment such women [9].

Around 38% of the patients were in the age group of 26-30 years, 22% were in the age group of <20 and another 20% were aged between 21-25 years. In a study conducted in Toronto Hospital average age of the pregnant women with heart disease was 29±5 years 39. Regarding socioeconomic status, around half of the were from lower class, 46% were from middle class and only 4% respondents were from higher class.

Regarding parity, majority of the respondents {54%) had parity between 1-2, 28% were nulli-porous and 18% respondents had parity more than 2. Among them 78% were multigravida and 22% were primigravida. The fact signifies that most women conceived even after knowing that they have heart trouble. This increases risk of adverse outcome. Adequate counselling should be done at the early stage of pregnancy most preferable even before conceiving [10].

Majority of the respondents (68%) had previous history of rheumatic disease and took treatment. For Rheumatic disease 77.1% took medical treatment, 20% took surgical treatment and 2.9% took both medical and surgical treatment.

About contraception, most of the respondents (80%) were found to use contraceptives and among the user half used barrier methods followed by 30% used pill and 20% used depot Injection for contraception. The use of contraception in fur more than the national contraceptive prevalence rate (CPR) 54% in 2000.[11] Contraceptive choice for women with heart disease should be tailored to the particular patient, taking into account any increased risks of thrombosis or infection associated with the various contraceptive methods and their interaction with the various heart lesions.

Study revealed that majority of the 64% receives ANC services, however if the percentage could further be elevated, more pregnancy could be prevented, at least adverse outcome could be prevented.

The purpose of the team is to review specific information about the woman's cardiac disease, anticipate potential system problems or problems the woman may encounter during pregnancy, and develop a written plan of care that is available to all departments. The plan should include optimal gestational age for delivery, best location for labor and delivery, and specific plans for delivery, such as the need for invasive monitoring or subacute bacterial endocarditis prop hylaxis [12].

Regarding clinical signs 41.0% respondents have peripheral oedema, 4.17% and generalised oedema and around 24% had lung oedema. Am the other signs 4.7% of the respondents had cyanosis and 12.8% had engorged neck-vein. Regarding cardiac symptoms 62% had Palpitation, 68% had Shortness of breath, 16% had Chest pain, 56 % experienced easy fatigability and 4% had syncope. Among the patient 76% consulted cardiologists before. Regarding complication among the study subjects 56.0 % had no complication. 20.0% had Anaemia, 15.0% had pre- eclamtic toxaemia, 7.0% had post partum haemorrhage and 2.0% had anaemia and post partum haemorrhage. The cardiovascular system undergoes important adaptations during pregnancy to accommodate for fetal requirements. This causes a hemodynamic burden on patients with underlying heart disease, and is associated with significant morbidity and mortality. Moreover, certain cardiovascular diseases may be due to pregnancy. Although unusual, these diseases can pose a threat to the pregnant woman and her fetus and the presentation may vary according to the severity and stage of heart condition [13].

CONCLUSION

In conclusion we can say that Majority of pregnant mother with heart disease availed ANC and were using contraceptive methods. Among them barrier methods were most preferred. Most of the mothers had previous history of rheumatic disease and took medical treatment and few of them took surgical treatment too. Around 36% of the mothers were referred to cardiology, 6% were immediately transferred to Cardiology and 6% died. Regarding foetal outcome, 9.5% had IUGR, 7.1% died during gestation and 4.8 % died after delivery.

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