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Maternal Outcome in Heart Disease in Pregnancy.

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ABSTRACT

To study general characteristics, type of disease as well as mode of delivery in pregnant women suffering from heart disease in view of recent development in prevention, diagnosis and management. This study also included the co relation between mode of delivery and severity of heart disease. This was a retrospective study conducted at Grant Government Medical College & Sir J. J Group of hospitals, Mumbai over period of one and half year. Total Forty six pregnant heart disease patients were analysed for age, parity, symptomatology, severity of symptoms & their Obstetric outcome was analysed. *Rheumatic valvular heart disease is still predominant amongst all heart diseases.* Vaginal delivery is commonest mode of delivery. Severity of disease is not associated with the mode of delivery. Heart disease is genuine risk factor for mother. Recent advances in management of cardiac diseases are associated with favourable maternal outcome and thus improving obstetric carrier of women with heart disease.

INTRODUCTION

Pregnancy associated with any form of heart disease is a challenge for obstetrician and cardiologist. Cardiac disease has significant impact on maternal health during pregnancy, labour and delivery. Even though heart disease complicates 0.1 to 4% pregnancies but it contributes to significant amount of maternal mortality and morbidity [1, 2]. Cardiac disease is one of the most important non obstetric causes of maternal mortality.

In the era of modern medicine, the pattern of heart disease in pregnancy is different in developed countries as compared to that of in developing countries like India, most of developing countries are facing the problem of Rheumatic heart disease on the other hand developed countries are dealing with congenital heart disease. Reasons behind predominance of rheumatic heart disease are –

- Poverty
- Lack of hygiene
- Illiteracy
- Poor access to the health facilities.

With the declining incidence of rheumatic fever and the significant advances in the management of congenital heart disease, the ratio of rheumatic heart disease to congenital heart disease in pregnancy has decreased to approximately 1:3 in other parts of the world [3]. In western countries, maternal heart disease complicates 1–3% of pregnancies and is the third common cause of maternal death during pregnancy [2]. As all above factors are virtually absent in developed countries. Also they have-

- Early diagnosis of congenital heart diseases
- Better management
- Awareness & knowledge

These factors explain the rising percentage of congenital heart disease and ischemic heart disease in pregnancy. Thus the panorama of heart disease in pregnancy has changed and will further change as the branches of medicine evolve day by day.

Present study aims to evaluate maternal outcome in pregnant woman with heart disease in view of recent development in prevention, diagnosis and management.

MATERIALS AND METHODS

The present study consists of pregnancies complicated with heart disease, delivered in the Grant Government Medical College & Sir J.J Group of Hospitals, Mumbai, which is a tertiary care teaching institute... All the cases included in the study cohort fulfil both inclusion and exclusion criteria. The study period was from December 2010 to June 2012. It gives us an opportunity to study incidence, pattern, and severity of the heart disease as well as its effect on pregnancy and vice versa. The study design and its details are as given below-

- Total duration of research : 2 years
 - Period of collection of data : 1½ year
 - Deadline for collection of data December 2010 to June 2012
- **Inclusion Criteria** - All the cases of heart disease in pregnancy beyond 8 weeks of gestation who were admitted and delivered in the tertiary care centre during the period of December 2010 to June 2012.
 - **Exclusion Criteria** - All the cases aborted prior to 8 week of gestation.

Cases in which Medical Termination of Pregnancy was done were excluded.

Detailed medical history along with routine obstetric history was elicited regarding duration of disease, medication i.e. penicillin prophylaxis, anticoagulant drug therapy or other cardiac surgery prior to pregnancy and any complication in previous pregnancy. All these cases were analysed with regard to their age, parity, type of cardiac lesion, NYHA status, antenatal care, and mode of delivery, obstetric and medical complications.

All patients underwent detailed antenatal evaluation including ultrasonography (USG) and regular antenatal follow up. Cardiology consultation was done in all patients and their advices were followed. Women with NYHA III and IV were admitted at their first ANC visit, while group I and II were followed up every 15 days antenatal and admitted by 36 wks.

Severity of lesion was evaluated with 2D-echo measuring valve area, pressure gradients across valve and pulmonary arterial and venous pressure gradient and left ventricular ejection fraction. We also analysed all those cases which required any operative cardiac intervention in either this pregnancy or in previous one. Also patients from high risk group were admitted throughout ANC period.

Patients were allowed to go in spontaneous labour unless having any obstetric indication for induction of labour or caesarean section. However, Instrumental vaginal delivery was performed to cut short second stage of labour whenever required. Infective endocarditis prophylaxis was given to all patients irrespective of type, severity of heart disease also operative procedures were done or not. Unfortunately due to technical problems the facility of epidural analgesia was not provided to any of the case.

Those who had premature rupture of membranes were induced by intracervical gel dinoprostone insertion. However those who had previous LSCS were given a short trial of scar. Few of the selected cases underwent planned LSCS for recurrent indication with prior anaesthetic & cardiologist check-up. Thus all the protocols followed during management of these cases were similar so as to minimize the intra cohort bias.

- All the cases were advised follow up in post-partum period on OPD visit basis. At the time of discharge the patients along with their spouses were counselled regarding the various contraception

methods available. . All the cases were persuaded to continue the cardiac management which is very often neglected after the delivery.

RESULTS AND OBSERVATIONS

Table 1: Shows Distribution of cases according to Gravida

Gravida	Number of patients	Percentages %
1	12	26.1%
2	14	30.4%
3	11	23.9%
4	4	08.7%
5	2	04.3%
6	3	06.5%
Total	46	100.0%

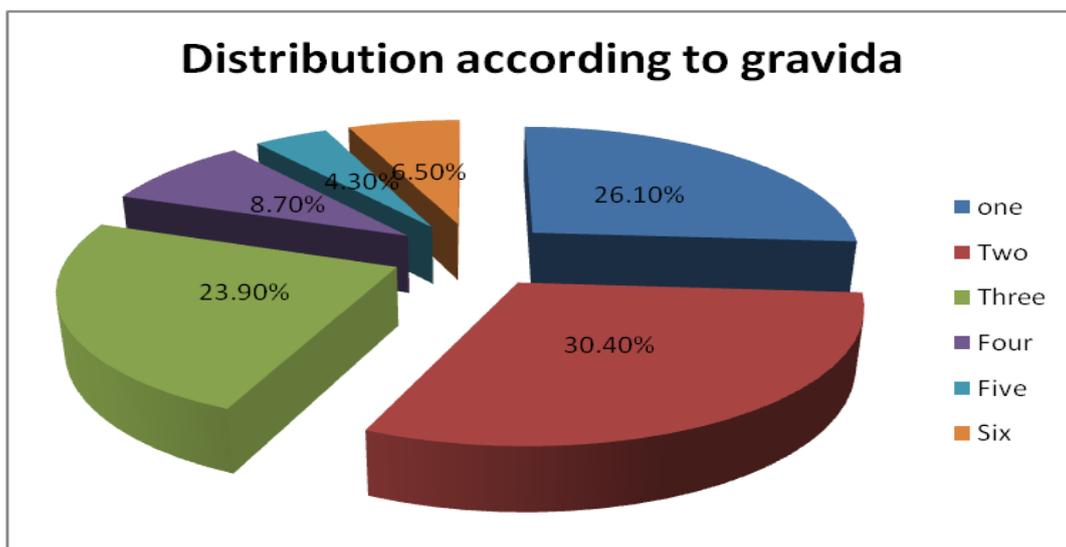


Table 1: illustrate that maximum 30.40 % women were second Gravida.

Table 2: Illustrates Type of Heart Disease in pregnancy

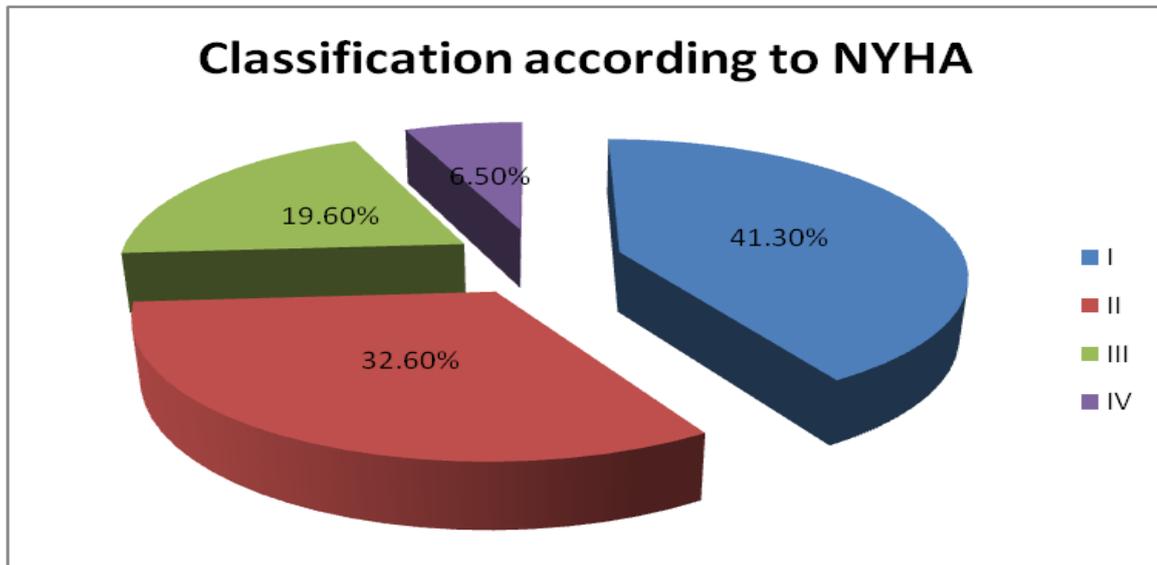
Type of Heart Disease	Number of Patients	Percentage %
Rheumatic	34	73.9%
Congenital	08	17.4%
Arrhythmic	04	08.7%
Total	46	100.0%

Table 3: Classification according to mode of delivery.

Mode Of Delivery LSCS/Vaginal/Instrumental	Sub type	Number of patients	Percentage
Vaginal	FTND	16	34.82%
	Preterm Vaginal	5	10.86%
	VBAC	3	06.52%
	Preterm Vaginal Breech Delivery	1	02.1%
	Full term Vacuum assisted	2	04.2%
	Full term LSCS	14	30.4%
LSCS	Pre term LSCS	1	02.1%
Abortion	Abortion	4	08.4%
Total		46	100.0%

Table 2 illustrates that the principal type of heart disease in pregnancy is Rheumatic valvular heart disease i.e. 34 cases [73.9%] while congenital heart disease accounts for 8 cases that are 17.4 % and remaining were miscellaneous which includes arrhythmia and cardiomyopathy.

Graph no 1 shows classification as per NYHA Grade



The above pie chart shows majority of cases belong to the NYHA Class I constituting 19 [41.3%] cases. There were only 3 [6.5%] cases which belong to the NYHA Class IV.

Table 4: Cases distributed as per the Mode of Delivery.

	Risk	Delivery mode					
		Vaginal		LSCS		Instrumental	
		Count	Column N %	Count	Column N %	Count	Column N %
	Low risk	16	66.7%	12	80.0%	2	66.7%
	High risk	8	33.3%	3	20.0%	1	33.3%
	Total	24	100.0%	15	100.0%	3	100.0%

Table no.4 Persons Chi Square Test

		Delivery mode
Risk	Chi-square	0.631
	df	2
	P value	0.729

Table no 4 & 5 shows Association between severities of heart disease [NYHA Class] with the mode of delivery.

As the p level is > 0.05 it is not significant.

Hence there is no statistically significant association between two.

DISCUSSION

Despite advances in diagnosis and treatment, maternal heart disease represents an interdisciplinary medical challenge.

Incidence

In the present study of one and half year there were 47 heart disease out of 4600 deliveries including abortions conducted in tertiary care centre. Incidence of heart disease complicating pregnancy

was. 1%. In study conducted by Farhana Asghar, et al ^[4] in developing country like Pakistan incidence of the same turned out to be 0.98%, which is very close to the observation by study conducted by us

Type of Heart Disease

Although the incidence of cardiac disease in pregnancy as a group has remained more or less unchanged the relative contribution of different causes of heart disease varies with the study population as well as period. Amongst all, 73.90% patients had Rheumatic Valvular Heart disease. This predominance of rheumatic valvular heart disease is comparable to the values given in various studies.

The below table shows comparison between various studies regarding type of heart disease in pregnancy.

Type of disease Study	Rheumatic	Congenital	Others
Our Study [2010 -2012]	73.90%	17.40 %	08.70%
Bhatala et al [2003 India]	88 %	22 %	0
C.N.Sheela et al [2007 India]	67 %	26 %	17 %
Konnar H [2007 India].	69.41%	21.37%	9.22%
F. Ashagar et [2005,Pakistan]	66 %	28%	6 %
V.Stangel et al [2006, Germany]	10.8%	81.7%	7.5%

. There is predominance of mitral valve disease combined with either alone or other valve in the form of 58.82% cases. M Malhotra ^[3] analyzed the pattern of valvular heart disease in pregnancy over period of 10 years in India and noticed 52.6 % cases of mitral valve disease.

Parity and age

The study group includes only 26.1% were primigravidae while rest others were multigravidae. Hameed et al ^[5] also analysed the parity and found 52% multigravida. . The mean age of women participated in study is 26. 67 +_ 4.1 years. This mean age group value is in accordance with that of given by M.Malhotra as 25.2 + 3.7.

Severity of disease

As per NYHA classification we had 41.3% of class I patients. This value is comparable with V Stangle ^[6] has observed that 34% of cases belongs to low risk group. The High risk group which includes cases from, NYHA Class III & IV and accounts .for 26.1 % cases.

NYHA	M.Malhotra	C.N.Sheela et al ^[7] [2007 India]	H. Konnar ^[8] [2007 India]	Our study
Class I	56.1%			41.3 %
Class II	30.8%	90%	83.47 %	32.6%
Class III	8.3%		15.30 %	19.6%
Class IV	4.8%	10%	0.14%	6.5%

All above values are roughly in the same range and comparable with each other.

Mode of Delivery

While studying the mode of delivery, 27 patients delivered vaginally. 16 cases were full term normal delivery [37.2%], 5 had pre term vaginal delivery. We 3 successful VBAC .There was also 1 preterm breech delivery. Instrumental delivery was conducted in 2 cases; Vacuum was applied to cut short the second stage of labor in cases where there was poor maternal bear down efforts. The rate of spontaneous abortion was 4%.

Out of 46 cases, 15 cases required caesarean section. All of them were term while only 1 of them was preterm the most common indication is previous LSCS with impending scar rupture. Only 1 LSCS was done for fetal condition.

The values are comparable with Asghar et al, C N Sheela M Malhotra and colleagues who had conducted similar studies at different period of time in developing countries.

Mode Of Delivery	Vaginal	Caesarean	Instrumental
Our Study	58.1 %	32.5%	6.9%
F. Asghar et al	91.42%	8.58%	0%
M. Malhotra et al	81.7%	8.9%	9.9%
Konnar H [2007 India].	49.80%	33%	17%

If we subdivide them as per the severity of disease, in both high and low risk group cases against the mode of delivery, the most common mode of delivery remains vaginal [Table No 4].

To find the association between above two factors we have applied Chi Square Test As the p value is less than 0.05%, there is no significant association found between the severity of disease and different mode of delivery. In case of both the high and low risk patients mode of delivery is independent of severity of lesion

CONCLUSION

Heart disease during pregnancy is genuine risk factor for mother .Rheumatic Valvular heart disease is still predominant amongst all types of heart diseases. Even though most of the cases are diagnosed in NYHA class I & II, the risk of further deterioration remains considerably. Vaginal delivery is commonest mode of delivery while Caesarean section is performed only for obstetrics because .The severity of disease is not associated with the mode of delivery.

Consequent interdisciplinary approach, to include specialized cardiologic care, high-risk obstetric support, and neonatologic expertise with close monitoring of patients, are prerequisite for successful management of high-risk pregnancies with maternal heart disease

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