International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2016): 79.57 | Impact Factor (2015): 6.391

Study of Maternal Outcome in Pregnancy with Heart Disease

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Abstract: ***Objective: To study the maternal outcome in pregnancy with heart disease. Material & Method: The prospective analytical study of 30 pregnant consenting women with heart disease attending antenatal OPD or coming as emergency patient in labor room of new civil hospital, surat in 1 year duration. Primary outcome noted is maternal outcome in pregnancy with heart disease. Inclusion Criteria: Pregnancy with heart disease (congenital or acquired). Exclusion Criteria: pregnancy with heart disease and any medical conditions like diabetes, liver disease, renal disease etc and not consenting for the study. Summary: Majority of subjects belonged in the active reproductive age group i.e. 20-25yrs(73%). Majority being primiparous(57%). More than half of subjects had Rheumatic Heart Disease with 37% having mitral valve lesions. 17% of the subjects had congenital heart disease with 80% constituting atrial septal defect.20% of the subjects had peripartum cardiomyopathy. 50% of the subjects were enrolled with NYHA grade 2. Most common pregnancy associated complication was pregnancy induced hypertension (17%) followed by sickle cell anemia (13%). 27% of the subjects developed pulmonary oedema and 20% developed congestive cardiac failure. All complications were encountered in acquired heart diseases.. There was no maternal mortality in this study. Conclusion: There is still a large pool of patients with RHD in reproductive age group. Early diagnosis, specialized cardiac care, new advanced technologies, and multispeciality team approach has made it easy for pregnancy with decompensated heart disease to tolerate pregnancy better.***

Keywords: Pregnancy, heart disease, maternal outcome, cardiac complication

1. Introduction

Heart disease in pregnancy remains one of the leading causes of non-obstetric maternal death during pregnancy[1]. Hence management of pregnancy with heart disease is of prime importance for an obstetrician. Cardiac disease and pregnancy affect each other adversely during the course; hence management of pregnancy in heart disease is a joint effort and a challenge to obstetrician, cardiologist and neonatologist.

Pregnancy is a physiological state, which makes extra demands on the cardiovascular system, which in the presence of heart disease deteriorates the patient's condition. It has been observed that with proper supervision and aggressive management, it is possible for the patient to meet these needs satisfactorily and to survive pregnancy and childbirth without any further degradation in her cardiac and general condition. Not all clinical cardiac conditions are associated with bad prognosis. The prognosis of pregnancy in heart disease depends on type, duration, severity of heart disease, age of patient and presence of other comorbidities. For instance, pregnancy is contraindicated in certain conditions like primary pulmonary hypertension[3], certain others have high mortality rates like severe mitral stenosis and certain others have a benign course during pregnancy like mitral valve prolapse. Hence risk assessment and proper diagnosis affects therapeutic decision and counselling about future pregnancies.

The spectrum of cardiovascular disease is changing and varies from country to country. In developed countries, the incidence of rheumatic heart disease has declined markedly due to advent of antibiotics and congenital heart disease accounts for majority of heart disease[1]. Whereas in developing countries, rheumatic heart disease is still predominant and major cause of maternal morbidity and mortality[1,2].

Thanks to the recent advances in diagnostic techniques, medical management and surgical techniques which has made pregnancy possible for women who wouldn't have attempted in past, reduced fetomaternal mortality and morbidity and improved maternal and foetal outcome. Thanks to the advances in surgical treatment of congenital heart diseases which has made it possible for many females to reach childbearing age. The recent advances in surgical correction of valvular lesions even during pregnancy have also improved the fetomaternal outcome. However associated lifelong risk and complication of anticoagulation, embolism, and endocarditis cannot be overlooked.

There is a great difference in outcome of registered and unregistered patients. Constant supervision and monitoring throughout pregnancy, labour and postpartum is associated with better fetomaternal outcome. Despite all, in India we deal with patients of low socioeconomic status who present to you majority of times with complications i.e. in failure or when labour sets in. Many cardiac lesions are first identified in antenatal check-up due to symptoms that arise because of physiological changes of pregnancy who when discharged again fail to follow up. Hence despite all advances, cardiac lesions are still a major cause of non-obstetric maternal mortality. Thus, these small but very significant groups of pregnant patients demand special study for their problems and outcome.

2. Literature Survey

Many advances have been made over years to understand the occurrence of pregnancy with heart disease and its effective diagnosis. In 1939, cardiac efficiency was

classified according to New York Heart Association.by 1990, colordoppler echocardiography developed and by 2000 other imaging techniques were established.

High circulating estrogen stimulates renin-angiotensin system increasing aldosterone concentration, thereby causing sodium and water retention. High circulating progesterone causes vasodilatation, reduced peripheral resistance and water retention. These changes are well adapted by normally functioning heart but have a deleterious effect on already diseased heart. The chances of developing cardiac decompensation and hence failure is more from 28-32 week of gestation as hemodynamic changes are at its peak. Next common period of failure is immediate post partum due to increased venous return and unexpected autotransfusion resulting in cardiac overload and failure [1].

3. Aim and Objective

To study maternal outcome in pregnancy with heart disease. To study the behaviour of heart disease in antenatal, intranatal, and postnatal period.

4. Materials and Methods

This is a prospective analytical study of 30 pregnant women with heart disease attending antenatal outpatient department or coming as emergency patient in labour room of New Civil Hospital, Surat from July 2016 till August 2017. Pregnant women with congenital or acquired heart disease was the inclusion criteria and the exclusion criteria included non-consenting women, pregnant women with heart disease and other medical conditions like diabetes, liver disease, renal disease etc

Primary maternal outcome was noted in terms of maternal morbidity according to NYHA grading and maternal mortality

All the enrolled patients were thoroughly evaluated antenatally and intranatally for the association of various cardiac diseases with pregnancy. All the suspected and confirmed cases were thoroughly evaluated by investigations by joint consultation with physician and cardiologist. All confirmed cases were given functional classification based on NYHA classification (2003) and were screened for risk factors, complications during pregnancy, and fetal anomalies.

All patients with NYHA grade 1 or 2 were treated on outpatient basis and admitted 15 days prior to their expected date of delivery. They were followed up every fortnight till 28 weeks and every weekly thereafter.

All patients with NYHA grade 3 or 4 were admitted as soon as they were seen in the antenatal clinic and supportive treatment was given. Maternal weight, edema, heamoglobin, vitals, CVS & RS examination, urine analysis and screening for sickle wasdone in every antenatal visit. Penicillin prophylaxis was continued for RHD patients.

In first stage of labour, patient is given semi-recumbent position, hydration maintained, proper analgesia given, vitals monitored, prophylactic antibiotic given with oxygen supply and continuous fetal monitoring. Second stage of labour was cut short with use of ventouse or forceps under local anesthesia. Active management of third stage of labour done and diuretic was given to all. Ergot alkaloids were avoided as it precipitates failure. Post delivery, vitals are closely monitored for 24 hours with continuous oxygen and adequate analgesia. Exclusive breast-feeding is started.

5. Observation and Discussion

On analysis of demographic variables of the patient, it was observed that 90% of the subjects belonged to the active reproductive age group of 20-30 years of age with 73% belonging to 26-30 yrs. 47% of the subjects had primary education, i.e. until 8th grade. 60% of the subjects were residing in rural area. 57% of the subjects were primiparous. 70% of subjects presented in late third trimester, i.e. 32-40 weeks or in early labour. 60% of the subjects were unbooked in antenatal period. This trend could be largely attributed to the lack of education leading to ignorance to availing proper reproductive health care by the patients.

It is seen that 73% of the subjects presented with NYHA grade 1 or 2, i.e. with no or mild limitation of physical activity. They were enrolled in antenatal period and followed up regularly. Rest 27% was classified in NYHA grade 3 or 4, with majority referred in late trimester with failure or complications.

Table 1: NYHA grade[4] at enrollment

NYHA grade	*No. (n=30)*	*Percentage (%)*
1	7	23.33
2	15	50
3	5	16.66
4	3	10

Table 2: Nature of Heart Disease

Nature Of Disease	*No. (n=30)*	*Percentage (%)*
CHD	5	16.67
RHD	17	56.67
Others	8	26.66

57% of the subjects of our study had rheumatic heart disease. This could be explained by high incidence of streptococcal infection in childhood, as India is still a developing country. Incidence of congenital heart disease in our study was 17% due to early detection and correction of lesions by surgical interventions. 27% had cardiomyopathy and mitral valve prolapse.

Among CHD, the most common lesion was ASD constituting 13%. Among RHD, most common valve affected was mitral valve. Two patients had undergone mitral valve replacement and were not on any anticoagulants. 6 of them had peripartam cardiomyopathy with severely decreased LVEF <40%.

Table 3: Nature of Cardiac Lesions

Nature Of Lesion		*No. (n=30)*	*Percentage (%)*
CHD	ASD	4	13.33
	VSD	1	3.33
RHD	AS	1	3.33
	AR	2	6.66
	MS	0	0
	MR	4	13.33
	MS+MR	6	20
	TR	4	13.33
	PS	1	3.33
	MR+TR	2	6.66
	MVR	2	6.66
Others	PPCM	6	20
	MVP	2	6.66

Table 4: Associated complications of pregnancy

Complication of Pregnancy	*No. (n=30)*	*Percentage (%)*
Hypertensive Disorders	5	16.66
Iron deficiency anaemia	1	3.33
Sickle cell anaemia	4	13.33
Abruption	2	6.66
Oligohydramnios	3	10

Table 5: Maternal Complications

Complication	*No. (n=30)*	*Percentage (%)*
PPH	2	6.66
Pulmonary oedema	8	26.66
CCF	6	20
Mortality	0	0

Most common medical complication was pregnancy-induced hypertension contributing 17%. 3 of the subjects had oligohydramnios. 27% of subjects developed pulmonary oedema. Many of them were referred in third trimester or in late pregnancy after complications set in. 6 subjects developed congestive cardiac failure in intrapartum or immediate post partum period. 2 of them developed post partum haemorrhage. All patients with peripartum cardiomyopathy developed complications. Majority of complications developed in RHD patients. No mortality was observed in our study.

In this study, 73% of subjects underwent lower segment cesarean section. 55% was done for cardiac indications as opined by the cardiologist and physician with 68% performed in emergency as many were referred in late trimester with failure and complications. 27% had vaginal delivery with 75% being preterm.

Table 6: Modes of Delivery

Mode of Delivery	*Term of Pregnancy*	*No. (n=30)*	*Percentage (%)*
Vaginal delivery-8 (26.66%)	Fullterm	2	25
	Preterm	6	75
LSCS-22 (73.33%)	Fullterm	17	77.27
	Preterm	5	22.73

6. Conclusions

Pregnancy is an event of added stress to a patient with cardiac disease. A pregnant cardiac patient has to be in constant supervision of the obstetrician, physician, cardiologist and neonatologist to improve the fetomaternal outcome.

In our country, though Rheumatic Heart Disease is on a decline, still we have a large pool of women with established Rheumatic Valvular Heart Disease in the childbearing age group. Early diagnosis, preferably pre-conceptional is crucial to reduce complications and morbidity. Additional issues regarding management of cardiac disease in pregnancy are lack of education, lack of access to specialized cardiac care and occurrence of pregnancy in complicated uncorrected congenital and valvular heart diseases. Careful history taking and physical examination are key to diagnose heart disease early.

However, with supportive measures, newer advanced technologies, advances in cardiothoracic surgeries and multispecialty team approach in institutions it has been possible for the patients with decompensated severe cardiac diseases to sale through pregnancy with more ease, comfort, and safety.

References

[1] Arias F, Bhide AG, Arulkumaran S, Damania K, Daftary SN. Arias' Practical Guide to High-Risk Pregnancy and Delivery-E-Book: A South Asian Perspective. Elsevier Health Sciences; 2015.
[2] Misra R. Ian Donald's Practical Obstetric Problem, 6/e. BI Publications Pvt Ltd; 2006.
[3] Cunningham F, Leveno K, Bloom S, Spong CY, Dashe J. Williams Obstetrics, 24e. Mcgraw-hill; 2014.
[4] Regitz-Zagrosek V, BlomstromLundqvist C, Borghi C, Cifkova R, Ferreira R, Foidart J-M, et al. ESC guidelines on the management of cardiovascular diseases during pregnancy: the Task Force on the Management of Cardiovascular Diseases during Pregnancy of the European Society of Cardiology (ESC). Eur Heart J. 2011;32(24):3147–97.