

Frequency of Maternal Complications in Pregnancy with Cardiac Disease

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ABSTRACT

Objective: To determine the frequency of maternal complications in pregnancy with cardiac disease.

Study design: Descriptive case series

Subjects & methodology: This study was conducted at the Department of Obstetrics and Gynaecology, Services Hospital, Lahore during one year (from June 2011 to June 2012, Fifty-two pregnant women having cardiac disease with gestational amenorrhea for more than 28 weeks. Age ranged from 20 to 35 years. The patients were seen in antenatal clinic every two week until 28 weeks, and weekly until onset of the labour. Maternal outcome was assessed by the complications.

Results: Mean age of the patients was 30.9±4.8 year. Non-cardiac maternal complications were as follows: anaemia in 6(11.5%), PIH in 4 patients (7.7%), abruption placenta and PPH in 1 patient (1.9%). Similarly, cardiac maternal complications developed as follows: Pulmonary oedema in 6 patients (11.5%), atrial fibrillation in 2 patients (3.8%), bacterial endocarditis in 3 patients (5.8%).

Conclusion: The care of pregnant women who have cardiac disease is challenging. Pre-conceptual counselling is critical. Use of a well-informed multidisciplinary team, with close communication throughout pregnancy, is necessary to achieve the best possible outcome for the woman and her baby

Key words: Cardiac disease, Non cardiac complications, Cardiac complications

INTRODUCTION

The childbearing woman with cardiac disease presents a unique challenge to healthcare providers. The physiologic adaptations that accompany pregnancy and labor predispose the woman with cardiac disease to cardiac decompensation¹.

Cardiac disease complicates approximately 1% to 3% of pregnancies and is responsible for 10% to 15% of maternal mortality. The number of women of childbearing age with congenital disease is increasing as advances in diagnosis and treatment improve survival rates and overall health, allowing successful pregnancy².

Heart disease is the second most common cause of death in females of all ages and the third most common cause in the age range of 15 to 44 years. Thus, cardiac disease remains an important cause of maternal mortality, and is potentially avoidable with optimal care³.

The diagnosis and assessment of heart disease in pregnancy may be difficult because the physiological changes of normal pregnancy can mimic cardiac symptoms and signs and lead to the overdiagnosis of cardiac diseases⁴. Increasing numbers of women with heart disease reach adulthood as a result of advances in diagnoses and treatment of heart disease in childhood⁵.

Pregnancy in women with underlying major congenital heart defects poses increased risks to both mother and fetus⁶.

Improvement in health care services have allowed more frequent identification of pregnant women with congenital and acquired heart disease. Maternal heart disease comprises 0.2 to 3% of pregnancies⁷.

Korego et al⁸ demonstrated cardiac disease in pregnancy as Rheumatic heart disease (Mitral stenosis (44.5%), mitral regurgitation (20.9%), mitral stenosis +mitral regurgitation (13.6%), aortic stenosis (3.6%), aortic regurgitation (10.0%). Congenital heart disease (Atrial septal defect (7.3%), Ventricular septal defect (5.5%), Patent ductus arteriosus (0.9%) and Eisenmenger's syndrome (0.9%)⁸. Non-cardiac maternal complications were reported anaemia (9.1%), PIH (6.4%), abruption placenta (1.8%), PPH (0.9%), wound infection (1.8%) while cardiac maternal complications were Pulmonary oedema (10.9%), Atrial fibrillation (2.7%) and Bacterial endocarditis (4.5%)

MATERIAL AND METHODS

Fifty-two obstetric patients with cardiac disease who presented in OPD or labour room of Services Hospital, Lahore were selected and diagnosed with multidisciplinary approach consisting of obstetrician, cardiologist and neonatologist when required. Sample size was calculated 52 cases by taking confidence level 95%, margin of error 8.5%, expected percentage of pulmonary oedema 10.9%⁸. After informed consent

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evaluation was done by examination (vital signs, pallor, cyanosis, general nutrition of the patients followed by detailed obstetric examination and auscultation of the chest), investigations (ECHO, ECG, Doppler, Obstetrical Ultrasound) and patients were graded by New York Heart Association (NYHA) functional classification.

The patients were seen in antenatal clinic every two week until 28 weeks, and weekly until onset of the labour. The frequency of antenatal care depended on the grade of the cardiac disease. Admission in antenatal clinic was done according to the grade of the disease. For grade 1 & 2 patients, admission will be done 2 weeks before delivery, for grade 3 & 4 patients, as soon as diagnosis is made. Maternal education was carried out including discussion about balanced nutrition, adequate rest; avoid exertion, infections, anemia, adequate dental care, signs of cardiac failure, preterm labour and PIH.

Maternal outcome was assessed by the complications (non-cardiac: Anaemia, PIH, abruption placenta, PPH, wound infection), Cardiac (pulmonary oedema, atrial fibrillation, bacterial endocarditis).

RESULTS

Majority of the patients were between 31-35 years of age. Mean age of the patients was 30.9±4.8 year. Non-cardiac maternal complications were as follows: anaemia in 6 patients (11.5%), PIH in 4 patients (7.7%), abruption placenta and PPH in 1 patient (1.9%). Similarly, cardiac maternal complications developed as follows: Pulmonary oedema in 6 patients (11.5%), atrial fibrillation in 2 patients (3.8%), bacterial endocarditis in 3 patients (5.8%). 41 patients (78.9%) had no complications. Rheumatic heart disease was found in 42 patients. Out of these 42, mitral stenosis in 21 (40.4%), mitral regurgitation in 9 (17.3%) mitral stenosis+mitral regurgitation in 5 (9.6%), aortic regurgitation in 2 (3.9%) and aortic stenosis in 5 patients (9.6%). Congenital heart disease in 10 patients. Out of these 10 patients, atrial septic effect developed in 6 patients (11.5%) and ventricular septal defect in 4 patients (7.7%).

Table 1: Age distribution (n=52)

Age (Year)	No.	%age
20-25	09	17.3
26-30	17	32.7
31-35	26	50.0

Table 2: Non-cardiac maternal complications (n=52)

Complications	No.	%
Anaemia	06	11.5
PIH	04	07.7
Abruption Placenta	01	01.9
PPH	01	01.9
No complications	40	76.9

Table 3: Cardiac maternal complications (n=52)

Complications	No.	%
Pulmonary oedema	06	11.5
Atrial fibrillation	02	03.8
Bacterial endocarditis	03	05.8
No complications	41	78.9

Table 4: Cardiac heart disease pregnancy (n=52)

Heart disease	No.	%
Rheumatic heart disease (n=42)		
Mitral stenosis	21	40.4
Mitral regurgitation	09	17.3
Mitral stenosis+Mitral regurgitation	05	09.6
Aortic regurgitation	02	03.9
Aortic stenosis	05	09.6
Congenital heart disease (n=10)		
Atrial septic defect	06	11.5
Ventricular septal defect	04	07.7

DISCUSSION

Blood volume increases 40% to 50% during normal pregnancy. The increase in blood volume is greater than the increase in red blood cell mass, contributing to the fall in hemoglobin concentration (i.e., the “anemia of pregnancy”). Similarly, cardiac output rises 30% to 50% above baseline, peaking by the end of the second trimester and reaching a plateau until delivery⁹.

Accurate assessment of the individual maternal and fetal risk in pregnant women with heart disease is of fundamental importance for optimal patient care. Despite the diversity and broad morphological and functional variability of heart diseases, few predictors for complications during pregnancy have been recently described. In a study by Siu et al¹⁰ identified poor functional NYHA class or cyanosis, left ventricular systolic dysfunction, and left heart obstruction as major determinants for maternal cardiac complications. In the clinical setting, this classification proved to be basically useful and enabled reliable assessment not only of maternal but also of fetal/neonatal risk.

The diagnosis and assessment of heart disease in pregnancy may be difficult because the physiological changes of normal pregnancy can mimic cardiac symptoms and signs and lead to the overdiagnosis of cardiac diseases. Appreciation of these changes, a high index of clinical suspicion, and timely referral for cardiological assessment and investigations are important for an accurate diagnosis to be made¹¹.

Maternal monitoring during labour should be individualized and usually includes continuous electrocardiographic monitoring and pulse oximetry,

and occasionally invasive blood pressure recording. All women with congenital heart disease should be warned against lying flat during pregnancy, and especially labour, to avoid aortocaval compression (left decubitus position is the position of choice). Endocarditis prophylaxis should be considered for most patients with congenital heart disease irrespective of the mode of delivery.

In present study, majority of the patients had Rheumatic heart disease (42 out of 52 patients). Our results are comparable with two studies carried out by Nqayana et al¹² and Abdel-Hady et al¹³.

In our study most common lesion was mitral stenosis which is also supported by the findings of Sawhney et al¹⁴ and Wasim et al¹⁵. In this study congenital heart disease was found in 10(19.2%) pregnant women. Among these, 6 patients (11.5%) had atrial septic defect and 4 patients (7.7%) had Ventricular septal defect.

Cardiac maternal complications during pregnancy were pulmonary oedema 11.5%, atrial fibrillation 3.8% and bacterial endocrditis 5.8%. These complications were also demonstrated by other studies^{12,16}.

CONCLUSION

In conclusion, common cardiac maternal complication was pulmonary oedema and Rheumatic heart disease was the commonest cardiac lesion among pregnant women.

Although pregnancy can pose substantial risks for women with heart disease, it remains feasible for most with suitable medical support. Pre-pregnancy counselling and multidisciplinary care including cardiologists, obstetricians, and anaesthetists are essential to help these women.

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