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Frequency of Adverse Maternal Outcome with Valvular Heart Disease

Mussarat Haider, Shagufta Noor, Rahila Farhat

ABSTRACT

Objective: To determine frequency of adverse maternal outcome in women with valvular heart disease. **Study design:** Cross-sectional study. **Sampling technique:** Non-probability consecutive sampling. **Place & duration:** Department of obstetrics & Gynae Allied & DHQ hospital Faisalabad for 1 year from 01-01-2017 to 31-12-2017. **Patient & methods:** 254 pregnant women with heart disease were included in study. Final diagnosis of valvular heart disease was made by echocardiography. Maternal outcome in term of cardiac failure and arrhythmia measured. **Results:** out of 254 patients 93(36.6%)were of 20-25 years of age,127(50%)were in 26-30 years age group and remaining 34(13.4%)were more than 30 years of age.123(48.4%)were gravida 1,84(33%)were gravida 2,35(13.8%)gravida 3 and remaining 12(4.8%)were gravida 4 and more.174(68.5%)patients were booked and remaining 80(31.5%)were unbooked.103(40.6%)were diagnosed before pregnancy,15(5.9%)in 1st trimester,101(39.7%)in 2nd trimester and 35(13.8%)in 3rd trimester.133(52.4%)patients were of mitral stenosis,52(20.4%)of mitral stenosis and regurgitation,27(10.6%)of aortic stenosis,21(8.2%)of multivalve disease,13(5.2%)of prosthetic valve and 8(3.2%)of coronary artery disease.193(76%)patients were delivered vaginally,45(17.7%)undergo C-Section and 16(6.3%)induced abortion.10(3.9%)developed heart failure,18(7.1%)arrhythmias,13(5.1%)bleeding and 7(2.7%)patients died. **Conclusion:** Heart disease in pregnancy is a high-risk condition. Multidisciplinary approach achieves good maternal outcome.

Keywords: Pregnancy, valvular heart disease, maternal outcome.

Corresponding Author
Dr. Mussarat Haider
Senior Registrar, Gynecology
Allied Hospital, Faisalabad
Contact: +92 333-8976374
Email: drsaleemiqbal@yahoo.com

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INTRODUCTION

Pregnancy imposes an additional burden on cardiovascular system both in normal woman as well as in patient with cardiac disease.[1] Increased cardiac workload during pregnancy increases mortality and morbidity in women with cardiac disease.[2]

Cardiac disease during pregnancy is still a major burden worldwide. Out of total pregnancies 0.2-3% comprises of maternal heart disease and is responsible for 10-25% of maternal death.[3]

In developed countries women with pre-existing heart disease, maternal mortality is 1% which is 10% of all maternal mortalities.[1] In these countries common cause of cardiopathy is congenital heart disease.[4]

Rheumatic heart disease (RHD) is most common cardiac disease during pregnancy in developing countries.[5] In Pakistan RHD is prevalent in 65.3% patients, of which mitral valve disease is encountered in the majority. These include 31% with mitral stenosis (MS) and 26.2% with mitral incompetence (MI). Aortic stenosis (AS), however, accounted for 7.1 %cases, while 2.4% had complete heart block with pacemaker implantation done prior to pregnancy.[1]

Medical complications in women with cardiac disease during pregnancy were cardiac failure 14%, Arrhythmia 12%.[5] Both sustained arrhythmias and extra-systole are more frequent during pregnancy.[6]

Management of pregnant woman with cardiac disease requires a multidisciplinary team for optimal maternal outcome.[4] For all patients with cardiac disease spontaneous vaginal delivery along with good analgesia and a low threshold for forceps assisted birth is safest method. This is because of reason that it causes less hemodynamic changes than cesarean section and less risk of infection.[6]

Special attention is given to risk factors of an undesirable outcome of pregnancy for mothers with high functional class cardiac insufficiency, high blood pressure gradient and severe pulmonary hypertension with mitral and aortic valve stenosis.[7]

Pakistan is developing country and most of patients hardly seek any medical checkup before and during pregnancy, this led to very high maternal mortality and morbidity in our country. This study will help to identify burden of maternal complications in valvular heart disease. This would help a long to create awareness among obstetricians about the disease load in our population and make them careful in early identification and diagnosis of valvular heart disease in pregnant females and management of disease in collaboration with cardiologist. Eventually it will prevent devastating complications of valvular heart disease in pregnant females.

Valvuvar Heart disease:

Stenosis: It is narrowing of disease valve leading to reduce blood flow through valve. It was defined by echocardiography, which showed thickened, calcified valve, with fusion of valve

leaflet or poor separation. Diameter for mitral valve < 5 cm^2 and for aortic valve <3 cm^2.

Regurgitation: It is diseased valve which fail to close adequately leading to back flow of blood. It was defined by echocardiography which shows area and depth of regurgitant.

Outcome: Was measured in terms of cardiac failure & arrhythmia

Cardiac failure: Heart is not able to maintain cardiac output to meet body demands is known as cardiac failure. It was diagnosed on echocardiography which showed systolic or diastolic impairment of left or right ventricle.

Arrhythmia: It is the abnormality of cardiac rhythm.

On ECG

Rate :< 60 bradycardia and >100 tachycardia.

Irregular rhythm and absent P wave (atrial fibrillation) & QRS width < 120 ms (supraventricular tachycardia) and if >120 ms (ventricular tachycardia).

New York heart association (NYHA) classification:

- NYHA class I: Asymptomatic
- NYHA class II: Symptoms with greater than normal activity
- NYHA class III: Symptoms with normal activity
- NYHA class IV: Symptoms at bed rest.

Objectives: To determine frequency of adverse maternal outcome in patient with valvular heart disease in terms of

- Cardiac Failure. - Arrhythmia

METHODOLOGY

Study Design: Cross-sectional study.

Setting: Gynaecology & Obstetrics department of Allied and DHQ Hospital, Faisalabad.

Duration of Study: 1 year from 01-01-2017 to 31-12-2017

Sample Size: By using WHO sample size calculator total no of patients were 254.

Sample Technique: Non-probability consecutive sampling.

Inclusion Criteria: All pregnant women having valvular heart disease diagnosed during pregnancy or pre-pregnancy on Echocardiography.

Exclusion Criteria: Pregnant women with congenital heart diseases

RESULTS

Total of 93 (36.6%) patients were between 20-25 years of age,127(50%) were between 26-30 years of age and 34(13.4%) patients were above 30 years of age.

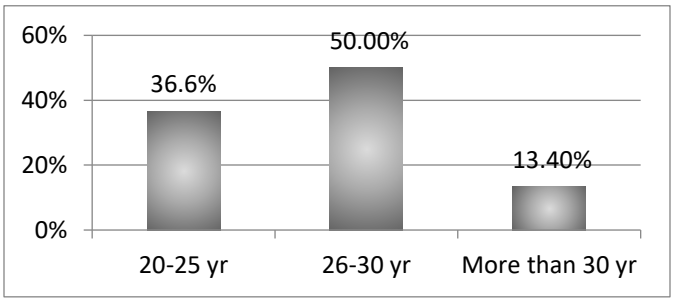

Figure 1: Age Group

123(48.4) patients were gravida 1,84(33%) gravida 2,35(13.8%) gravida 3 and 12(4.8%) were gravida 4 and above.

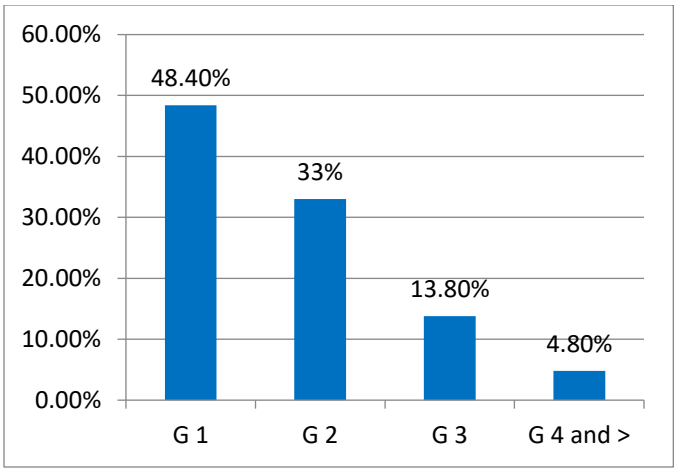

Figure 2: Gravida

174(68.5%) patients were booked while remaining 80(31.5%) were unbooked.

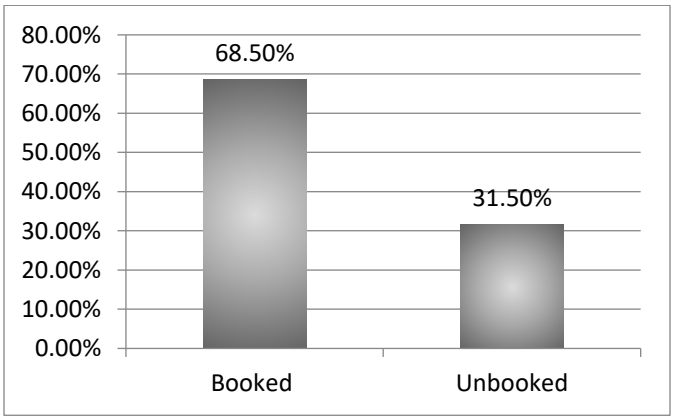

Figure 3: Type of Booking

103(40.6%) patients were diagnosed before pregnancy,15(5.9%) in 1st trimester,101(39.7%) in 2nd trimester and 35(13.8%) in 3rd trimester.

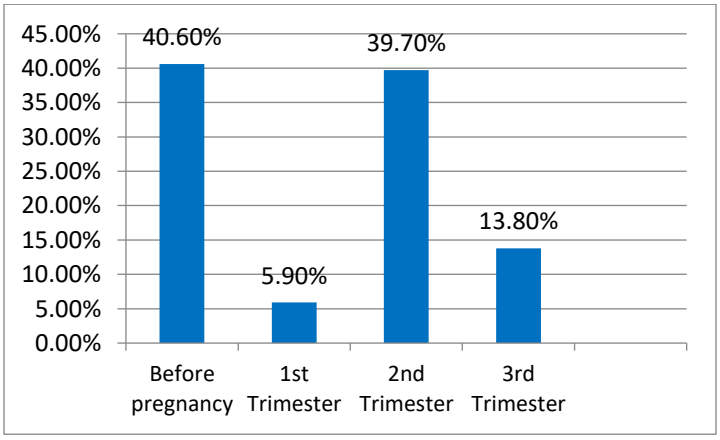

Figure 4: Time of Diagnosis

133(52.4%) were patients of mitral stenosis,52(20.4%) were of mitral stenosis and regurgitation, 27(10.6%) of aortic stenosis, 21(8.2%) of multivalve disease and 8(3.2%) were of coronary artery disease.

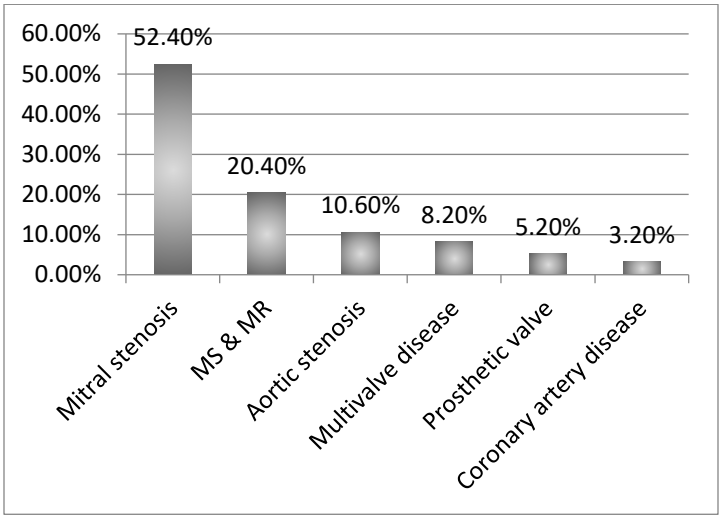

Figure 5: Acquired Heart Diseases

193(76%) patients were delivered vaginaly, in 45(17.7%) C-Section was performed. In 16(6.3%) patients abortion was induced.

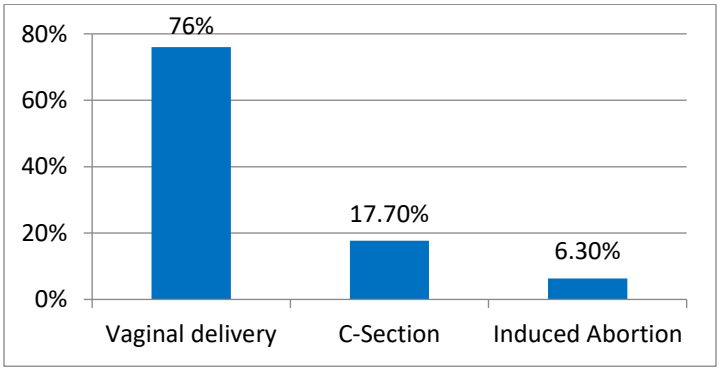

Figure 6: Mode of Delivery

10(3.9%) patients developed heart failure, 18(7.1%) arrhythmias,13 (5.1%) bleeding and 7(2.7%) patients died.

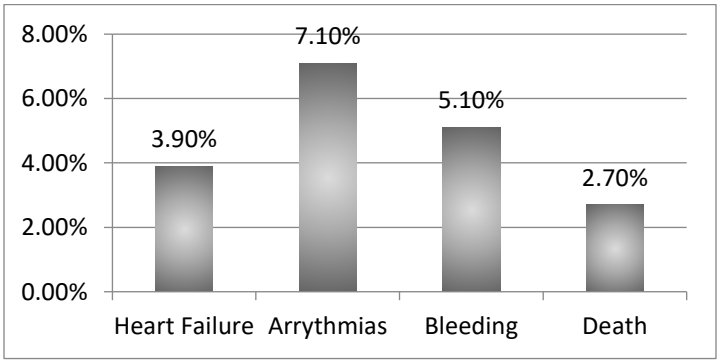

Figure 7: Maternal Outcome

DISCUSSION

Pregnant women with cardiac disease are major challenge for the obstetrician and cardiologist. Outcome can be improved by good clinical evaluation and judicious use of diagnostic tools (mainly echocardiography). In the developing countries RHD is major cause of maternal heart disease while congenital heart disease (CHD) overburden in the developed countries due to improved survival of children with CHD.[6,7]

In our study 127(50%) patients were between age of 26-30 years and 93(36.6%) were between 20-25 years of age. Most of patients (68.5%) were booked while remaining were un-booked. Due to increasing awareness day by day in people of developing countries like Pakistan most of patients booked them as they came to know that they are pregnant. This is comparable to other studies.[1,4]

123(48.4%) patients were gravida 1, 84(33%) were gravida 2 and remaining were gravida 3 ,4 & more. Most of patients in our study were gravida 1 & 2. Most of maternal cardiac disease manifest itself in first and second pregnancies and also most of patient with cardiac disease use effective contraceptive methods to avoid adverse maternal and fetal outcome with valvular heart disease. This is comparable to study in Germany where 57% patients were primipara.[11]

103 (40.6%) patients were diagnosed as having cardiac disease before pregnancy, 101(39.7%) in second trimester and remaining in first and third trimester. Due to improved investigations tools most of patients were diagnosed before pregnancy. As blood volume and cardiac output rise reach maximum in late second trimester ,at that time valvular diseases manifest and diagnosed.[4,5]

Mitral stenosis (52.4%) was the predominant lesion in the patient, this was in accordance with other studies.[12-14] 10.6%patients were having aortic stenosis and 20.4% (52) patients both mitral valve stenosis and regurgitation. This is comparable to study conducted in Islamabad.[1]

193(76%) patients were delivered vaginally as compared to 86%, 91.42% and 92% in other studies.[12-14] 45(17.7%) patients were delivered by caesarean section due to Obstetrics indications. Percentage of caesarean section is comparable to 26.5% in a study carried out by Asghar F.[12]

Congestive cardiac failure (CCF) was seen in 10(3.9%) of women as compared to 38% in a series by Hameed[13] and 20% in the study by Asghar.[12] During the first 24-72 hours post-delivery, significant fluid shifts can lead to CCF. So in the immediate post-partum period vital signs and fluid balance charts should be carefully maintained. Arrhythmias was seen in 18(7.1%) patients. Maternal death occurred in only (2.7%) cases as with the result (16%) and 2% mentioned by other.[13] Less maternal complications in our study was due to multidisciplinary approach involving senior cardiologist, physician, obstetrician & anesthetists.

CONCLUSION

Pregnant women having heart disease are a major challenge for the obstetrician and cardiologist. The successful management of these patients demands close liaison with obstetrician, cardiologist, pediatrician, anesthesiologist and all the supporting medical staff in order to optimize both mother & her baby. Outcome can be improved by careful clinical evaluation and diagnosis by using echocardiography.

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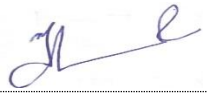
AUTHORSHIP AND CONTRIBUTION DECLARATION

AUTHORS	Contribution to The Paper	Signatures
Dr. Mussarat Haider Senior Registrar, Gynecology Allied Hospital, Faisalabad	Data Collection, Manuscript writing,	
Dr. Shagufta Noor Senior Registrar, Gynecology Allied Hospital, Faisalabad	Literature Review	
Dr. Rahila Farhat Ch Associate Professor, Gynecology Aziz Fatima Medical College, Faisalabad	Discussion and References