ORIGINAL ARTICLE

Feto-Maternal Outcome in Patients with Cardiac Disease in Pregnancy

NAILA YASMEEN, MAHMOOD ALEEM, NASIR IQBAL

ABSTRACT

Objective: To determine the fetal and maternal outcome in women presenting with heart disease during pregnancy.
Study design: Descriptive study.
Place and duration: Department of obstetrics/Gynae Unit-I, Allied Hospital, Faisalabad from January, 2009 to December, 2011.
Patient and methods: Forty pregnant women with heart disease were attended during study period. Maternal outcome measuring included obstetric and medical complications and maternal mortality while fetal outcome measures were prematurely, intrauterine growth restriction perinatal mortality, intrauterine death and indicated termination of pregnancy.
Result: Forty cases of heart disease were diagnosed out of 7000 obstetric patients giving a frequency of 0.62%. Twenty five (62.57) patients were in age group 21 – 25 and were primigravida while fifteen (37.5%) patients were in age group (30-35) (75%) and were multigravida. Thirty patients were unbooked. Rheumatic heart disease was the commonest aetiology and was found in 34 (85%) patients. Mitral valve was involved in all cases. Out of remaining six (15%) patients two (5%) patients had peripartum Cardiomyopathy, one (2.5%) patient had Ischemic heart disease. One (2.5%) patient had primary pulmonary hypertension, one (2.5%) patient had ventricular septal defect and one (2.5%) patient had Eisenmenger's syndrome. One (2.5%) patient had mitral commissurotomy, and three (7.5%) patients had prosthetic valve replacement. Based on New York Heart Association Functional Classification (NYHA) 30 (75%) patients were asymptomatic (class-I) and 3 (7.5%) patients were in class-IV. Twenty five (62.5%) patients were delivered vaginally and in fourteen (35%) of cases LSCS was performed. There is only one (2.5%) maternal death. The fetal outcome of forty cases was 35 live births with average weigh of 2 Kg. Low birth weight babies numbered in 16 (40%) cases. Six (15%) patients delivered prematurely. One (2.5%) intrauterine death occurred in a mother who died undelivered. One (2.5%) patient had therapeutic termination of pregnancy.
Key words: Pregnancy with cardiac disease. Fetomaternal outcome.

INTRODUCTION

Cardiac disease in pregnancy is still a major problem worldwide, particularly in poor countries. Although the reported incidence varies between 0.1 and 4%[1,2,3] the cardiac disease remain a significant cause of maternal death world wide[4]. Recent progress in Paediatric Cardiology and heart surgery has made children with congenital heart disease to survive to adulthood. Half of this population made up of women, most of women have reached child bearing age[5]. Pregnancy represents a new challenge in this group, whose natural history has been modified by surgery[6]. The number of pregnant women with coronary disease is expected to grow due to advanced maternal age, the development of assisted reproductive techniques and increased cardiovascular risk factors in women[7]. Even though rheumatic fever has decreased in developed countries in recent years, it continues to be a serious problem in developing countries. Rheumatic heart disease is endemic in Pakistan, with a prevalence of 5.7 per 1,000[8]. The reasons for high incidences of rheumatic fever in Asian countries might be the climate, poor socioeconomic. Conditions and over crowding, purulent streptococcal infections and lack of access to proper medical facilities[8,9]. Increased cardiac demands during the course of pregnancy potentially increase morbidity and mortality in women with underlying heart disease. Pregnancy-associated cardiocirculatory changes primarily, increase in heart rate, stroke volume and cardiac output, as well as reduction in systemic vascular resistance may threaten maternal outcome. Whereas pregnancy is associated with high maternal morbidity under some conditions, others such as valve insufficiencies generally follow a benign course during gestation if myocardial function is not compromised[10]. Both

Department of Gynaecology & Obstetrics, Allied Hospital, Faisalabad.
Correspondence to Dr. Naila Yasmeen, Senior Registrar.
E-mail: apnaila@yahoo.com

women with pre-existing yet undiagnosed heart disease and those with new (whether or not pregnancy-related) disease are likely to present primarily to obstetricians or primary caregivers and not to a cardiologist. A timely diagnosis, therefore depends on adequate awareness on the part of their GP or obstetrician. Main aims and objective of this study were to determine fetomaternal outcomes in pregnant patients with heart disease.

PATIENT AND METHOD

It was a two years cross sectional descriptive study done from January 2009 to December, 2010, at Gynae Unit-I of Allied Hospital Faisalabad. All pregnant patients with known or newly diagnosed or acquired cardiac lesion were included in the study. Detailed history and clinical examination was undertaken in all the patients and graded by New York Heart Association functional classification. All patients with heart disease were seen by the Cardiologist and diagnosis confirmed by clinical examination and echocardiography. Patient with NYHA class-I and class-II were managed on outpatient basis with the advice to take adequate rest and regular antenatal visits. They were advised for early consultation if there were symptoms of infection or decompensation like increasing dyspnoea on exertion, progressive oedema, palpation and hemoptysis. Patients in NYHA class-III and IV remained hospitalized throughout pregnancy. They were examined daily for cardiac status. CTG and biophysical profile were performed twice a week started after 30 weeks gestation. Serials growth scan fortnightly and evaluated weekly by cardiologist. A performa was made which included the background information regarding age, parity, booking status, obstetrics history, relevant past medical, surgical history and family history. In particular, the types of heart disease encountered, clinical presentation of the patients, grading according to NYHA functional classification, admission in antenatal ward and obstetric and medical complications were recorded in these women during pregnancy labour and immediate postpartum period. Maternal outcome included medical and obstetrics complications and maternal mortality. Fetal outcome measures included prematurity, intrauterine growth restriction and perinatal mortality, intrauterine death and indicated termination of pregnancy was recorded. Patients were assessed for the mode of delivery; those without any contraindications were allowed spontaneous vaginal delivery while others had a caesarean section. Instrumental delivery taken if maternal effort was poor. Fluid overload was avoided and so was ergometrine. Prophylactic antibiotic was given to patients. Patient undergoing spontaneous vaginal delivery was given narcotic analgesia. Low molecular weight heparine (LMWH) was given to those with prosthetic valve replacement. Digoxin, diuretics and antihypertensive were administered as indicated by the clinical situation. Patient were kept in high dependency area for at least 24 hours post delivery and were discharged later in liaison with the physician. Fetal outcome was recorded in term of APGAR score at 5 minutes, birth weight, prematurely (<37 weeks) and fetal lesions on echocardiography. All collected data was analyzed, utilizing statistical for social sciences (SPSS) version 10, in the form of percentage (relative frequencies) of variables.

RESULT

Forty women presented with heart disease during pregnancy and labour during this study period. The total deliveries during this period were 7000. The frequency of cardiac disease in pregnancy was 1% in this study.

The average age of women was out of 40 women 25 (62.5%) were primigravida and 15 (37.5%) were multigravida 30 years. Regarding antenatal care 30 (75%) patients were unbooked and 10 (25%) patients were booked. Out of 10 (25%) booked patients 2 (5%) patients were booked in the 1st trimester 2 (5%) presented in 2nd trimmest and 6 (15%) in the 3rd trimester. Among women with acquired heart disease, rheumatic heart disease was the commonest aetiology and was found in 34 (85%) of patients. Mitral valve was involved in all cases. Both aortic and mitral valve involvement occurred in 10 (29.4%). Multiple valve involvement was present in 10 (29.4%) of cases. While 8 (23.5%) patients had associated pulmorary hypertension. One (2.9%) patient had percutaneous transilluminal mitral commisurotam before pregnancy. Three (7.5%) patient had prosthetic valve replacement. One (2.5%) patient had Ischaemic heart disease, one (2.5%) had pulmonary hypertension, while 2(5%) had peripartum cardiomyopathy. One (2.5%) patient had Eisenmenger's syndrome and one (2.5%) had ventricular septal defect. Ten (25%) patient required admission for various obstetric indications of 40 patients 25(62.5%) delivered vaginally and 2 (5%) of them had forcep delivery. In fourteen (35%) of cases LSCS was performed for various obstetrical indications. One (2.5%) patient had therapeutic termination of pregnancy, where severity of cardiac disease posed threat to the life of the patient. Majority of women in study were given antibiotics prophalaxis for bacterial endocaridis. 10(25%) patient in study group had obstetric complications and 5(12.5%) women had medical complications while 3(7.5%)

patients had both medical and obstetric complications. One (2.5%) maternal mortality occurred in undelivered patients. Obstetric complication included 3 (7.5%) had pregnancy induced hypertension, 2 (5%) preterm perlabour rupture of membrane. 3 (7.5%) had foetal distress. Medical complications encountered were cardiac failure in 6 (15%) patients thromolmbolism in one (2.5%) patient. Regarding perinatal outcome low birth weight babies numbered 16 (40%), preterm labour was seen in 10 (25%) patients. 10 (25%) babies were growth restricted. 3 (7.5%) babies in class III & IV died as compare to 1 (2.5%) in class I. Overall four babies died in our study.

Regarding fetal outcome 38 (18 babies were delivered at term between 37-42 weeks gestation) were live birth babies. Low birth babies 14 (35%), six (15%) patients delivered prematurely. Intrauterine death occurred in a mother who died undelivered and one (2.5%) patient had therapeutic termination of pregnancy on medical ground – 16

DISCUSSION

Maternal heart disease is one of the most important causes of maternal death. In the developing countries rheumatic heart disease remains the major cause of maternal heart disease while in developed countries maternal congenital heart disease has become more prevalent due to improved survival of children with congenital heart disease[11]. In our study the frequency of the cardiac disease was 1% which is very close to the study carried out by Asghar[12] (0.98%). The rheumatic heart disease was the commonest aetiology and was found in 85% of the patients whereas in developing countries like our, rheumatic heart disease still comprises 90% of the cases[12]. This figure again very close to our study. The ratio of rheumatic heart disease to other heart disease was 3:1 which was comparable to study performed by Asghar[12].

Mitral stenosis was the predominant lesion in the patient with rheumatic heart disease, this was in accordance with other studies[12, 13, 14]. Functional class has a direct bearing on both the maternal and fetal outcome. 55% of patients in our study was in NYHA class-I, which 20% in class-III and IV, which is comparable to 22.3% in a series by Shawney[14]. 62.5% of patients were delivered vaginally as compared to 86%, 91.42% and 92% in other studies[12,13,14]. 35% of patients were delivered by caesarean section performed for Obstetrics indications. Percentage of caesarean section is comparable to 26.5% in a study carried out by Asghar F[12]. Congestive cardiac failure was seen in 5% of women as compared to 38% in a series by Hameed[13] and 20% in the study by Asghar[12]. Thrombolism was seen in 2% of our cases, which is similar to the incidence reported by Barbosa[15]. Maternal death occurred in only (2.5%) cases this is in agreement with the result (2.7%) (16%) and 2% mentioned by other[13]. Low percentage of maternal complications in our study was due to multi disciplinary approach involving senior, cardiologist, physician obstetrician and anaesthetists. Similarly because of improved perinatal care 35 (87.5%) of cases delivered live born. The low birth rate was 40% (n=16) in our series compared to 29.4% in Barbosa's[15] study. Preterm labour was seen 25% (n=10). The corresponding incidence in other studies was 141[13], 121[14] and 23[12]%. In our study intrauterine growth restriction was seen in 25% (n=10) compared to 18.20%[14] and 21%[13] in others. There was a significant difference in the perinatal outcomes between NYHA class I, II, III, IV in our study. The perinatal mortality rate in our series was 2.5% in class I and II compared to 10% (n=4) in class III & IV. The perinatal mortality in Sawhney[14] series in class I & II was 1.5% and 3.5% in class III & IV Siu[16] reported a perinatal death rate of 2% (96% were in class I & II and 4% in class III % IV). In view of the high risk of low birth weight, preterm delivery, intra-uterine growth restriction IUD and still birth antenatal fetal surveillance becomes mandatory and should be offered to these women with rheumatic heart disease and with other cardiac disease.

Type of booking

	=n	**% age**
Booked	30	75
Unbooked	10	25

Table. I: Type of Cardia lesion n = 40

A. Congenital heart disease	
No. of cases Percentage	One 2.5%
B. Rheumatic heart disease	
No. of cases Percentage	34 85%
C. Other Cardiac lesion	
No. of cases Percentage	5 12.5%

Table. II: Mode of delivery n = 40

1. Caesarean Section	
No. of cases Percentage	14 35%
2. Vaginal delivery	
No. of cases Percentage	25 62.5%
3. Induced abortion	
No. of cases Percentage	1 2.5%

Table. III : Complications associated with Heart disease

Obstetrical complications	**=n**	**%age**
i. Preterm labour	6	15
ii. Growth restriction	10	25
Medical complications		
i. Thromboembolism	One	2.5
ii. Cardiac failure	6	15

Table. IV: Perinatal outcome in patient with heart disease (n =40)

	=n	**%age**
Live birth	35	87.5
Perinatal loss	4	10
Termination of pregnancy	1	2.5

CONCLUSION

Pregnant women with heart disease are a major challenge for the obstetrician and cardiologist involved in their care. Careful clinical evaluation and with help of diagnostic tools like echocardiography we can achieve better outcome.

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