Management of Pregnants with Cardiac Disease in Our Clinic

KLİNİĞİMİZDE KALP HASTALIĞI OLAN GEBELERİN YÖNETİMİ

Aydın KÖŞÜŞ, MD,[a] Nermin KÖŞÜŞ, MD,[a] Metin ÇAPAR, MD[b]

[a]Department of Obstetrics and Gynecology, Gözde Hospital, MALATYA
[b]Department of Obstetrics and Gynecology, Selçuk University Meram Faculty of Medicine, KONYA

Abstract

Objective: Pregnancy with heart disease is high risk for the mother and the fetus. The aim of this study to evaluate the effect of cardiac disease on pregnancy and fetus.

Material and Methods: Fiftyfour women having cardiac disease were evaluated retrospectively. Age of the patients, previous pregnancies, parity, previous cardiac operations, present cardiac pathology and stage, present symptoms, type of the labor, gestational week during the labor, birthweight, APGAR scores were recorded. All collected data were analyzed in the form of percentages (relative frequencies) and the mean ± Standart Deviation (SD) of variables.

Results: Frequency of heart disease in pregnancy was 1.2%. Mean age of the women was 29.8 ± 5.6 years. Five (9.3%) of the cases had congenital heart disease while 49 (90.7%) 90.7% had acquired heart disease. 74% of acquired heart diseases were rheumatic in origin. Mitral valve disease was accounted for the majority of rheumatic disease.

The majority of the patients with heart disease were asymptomatic. Fourtyone cases were delivered vaginally while 13 cases by cesarean section. Birthweight was above 2500 g in majority of patients and majority of them were delivered at term.

Seven women had obstetric and 1 woman had medical complications. No maternal mortality was occurred. Obstetric complications included, 6 preterm labor, 1 premature rupture of membrane. Medical complication encountered was 1 case of cardiac failure.

Conclusion: Most young women with heart disease do well during pregnancy. The successful management of the pregnant women with cardiac disease relies on team care by the cardiologist, obstetrician, cardiothoracic surgeon, anesthetist, neonatologist, and the pediatric cardiologist.

Key Words: Pregnancy, heart disease

Özet

Amaç: Gebelikle birlikte olan kalp hastalığı anne ve fetüs için yüksek risk oluşturur. Bu çalışmada kalp hastalıklarının anne ve bebek üzerindeki etkileri araştırıldı.

Gereç ve Yöntemler: Kalp hastalığı olan 54 gebe kadın retrospektif olarak değerlendirildi. Yaşları, gebelik sayıları, geçirilmiş kardiyak operasyonlar, mevcut kardiyak patoloji ve evresi, mevcut olan semptomlar, doğum şekli ve haftası, bebek kiloları ve APGAR skorları incelendi. Toplanan veriler sıklık ve ortalama ± standart deviasyon şeklinde analiz edildi.

Bulgular: Gebelikte kalp hastalığının sıklığı %1.2 olarak bulundu. Kadınların ortalama yaşı 29.8 ± 5.6 yıl idi. Hastaların 5'inde (%9.3) konjenital kalp hastalığı, 49 tane (%90.7)'sinde ise edinilmiş kalp hastalığı tesbit edildi. Edinilmiş kalp hastalıklarının %74'ü romatizmal orijinli idi. Romatizmal orijinli olanlarda en sık mitral kapak hastalığı tesbit edildi.

Hastaların çoğunluğu asemptomatik idi. Hastaların 13'ü sezaryen ile doğum yaparken 41'i vajinal yolla doğurtuldu. Bebeklerin büyük kısmı 2500 gramın üzerinde olup term iken doğum yaptırıldı.

Hastaların 7'sinde obstetrik, 1'inde medikal komplikasyon gelişti. Anne ölümü oluşmadı. Obstetrik komplikasyonların 6 tanesi preterm doğum, 1 tanesi erken membran rüptürü şeklinde idi. Hastaların 1'inde kalp yetmezliği semptomları oluştu.

Sonuç: Çoğu genç kadında kardiyak hastalıklar iyi tolere edilir. Kardiyak hastalığı olan gebelerin başarılı bir şekilde yönetimi; obstetrisyen, kardiyoloji, kardiyotorasik cerrahi ve anestezi uzmanı ile neonatolojist ve pediatrik kardiyoloji uzmanının bir ekip halinde çalışmasına bağlıdır.

Anahtar Kelimeler: Gebelik, kardiyak hastalıklar

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Yazışma Adresi/*Correspondence:* Aydın KÖŞÜŞ, MD
Gözde Hospital,
Department of Obstetrics and Gynecology, MALATYA
aydinkosus@turkei.net

Pregnancy with heart disease is high risk for the mother and the fetus. The incidence of heart disease in pregnancy ranges from 0.3% to 3.5%.[1] In the West the proportion of maternal cardiac disease due to congenital disorders is

increasing and rheumatic disease is diminishing.[2,3] Recent advances in the medical and surgical treatment of patients with congenital heart defects has resulted in an increased survival to reproductive age. As increasing numbers of children with congenital heart disorders reach adulthood, the cardiologist and obstetrician will increasingly be asked to give advice on pregnancy and contraception.[4]

Pregnancy in most women with heart disease has a favourable maternal and fetal outcome. With the exception of patients with Eisenmenger syndrome, pulmonary vascular obstructive disease, and Marfan syndrome with aortopathy, maternal death during pregnancy in women with heart disease is rare.[5,6] However, pregnant women with heart disease do remain at risk for other complications including heart failure, arrhythmia, and stroke.

Pregnancy causes significant hemodynamic changes and imposes an additional burden on the patient with heart disease, especially around the time of labour and in the immediate puerperium. To achieve a successful pregnancy outcome, meticulous maternal and fetal surveillance for risk factors and complications throughout the antepartum, intrapartum, and postpartum periods are essential.

The aim of this study to evaluate the effect of cardiac disease on pregnancy and fetus.

Material and Methods

In this study women who gave birth in Selcuk University Meram Faculty of Medicine in 2 years and having heart disease were evaluated retrospectively. Age of the patients, previous pregnancies, parity, previous cardiac operations, history of rheumatic heart disease, present cardiac pathology and stage, present symptoms, type of labor, gestational week during labor, birthweight, APGAR scores were examined. Written informed consent was obtained from the patients.

All patients underwent cardiologic examination and echocardiography. Patients were divided into 4 groups according to New York Heart Association Functional Classification:

Class 1: Uncompromised. Patient with cardiac disease and no limitation of physical activity. They didn't have symptoms of cardiac insufficiency, nor did they experience anginal pain.

Class 2: Slightly compromised. Patients with cardiac disease and slight limitation of physical activity. These women were comfortable at rest, but if ordinary physical activity was undertaken, discomfort results in the form of excessive fatique, palpitation, dyspnea or anginal pain.

Class 3: Markedly compromised. Patients with cardiac disease and marked limitation of physical activity. They were comfortable at rest, but less than ordinary activity causes discomfort by excessive fatique, palpitation, dyspnea or anginal pain.

Class 4: Severely compromised. Patients with cardiac disease and inability to perform any physical activity without discomfort. Symptoms of cardiac insufficiency or angina might develop even at rest, and if any physical activity was undertaken, discomfort was increasing.

Preferred type of labor according to present cardiac pathology and stage, prognosis of mothers and infants were also evaluated. Obstetric and me-dical complications were recorded in these women during pregnancy, labor and immediate postpartum period. Maternal outcome included medical and obstetric complications and maternal mortality. Fe-tal outcome measures included prematurity, intrauterine growth restriction and perinatal mortality were recorded.

All collected data were analyzed, using Statistical Program for Social Sciences (SPSS) version 10, in the form of percentages (relative frequencies) of variables and mean ± Standart Deviation (SD).

Results

Fiftyfour women presented with heart disease during pregnancy and labor in 2 years. The total deliveries during this period were 4455. The frequency of heart disease in pregnancy was 1.2%. The mean age of women was 29.8 ± 5.6 (19-39) years. The mean parity of women was 1.7 ± 1.6 (0-8); 12 patients (22.2%) were nulliparous, 14 (26%) were primiparous, 28 (51.8%) were multiparous. Mean gestational age during labour was 38 ± 2.1 (30-41) weeks. Gestational age of 46 patients was above or equal to 38 weeks.

Of those with cardiac disease in pregnancy, 5 (9.3%) of them had congenital heart disease while 49 (90.7%) had acquired heart disease. None of these needed surgical treatment during prenancy. Three of those with congenital heart lesion had atrial septal defect (ASD), 2 of which were surgically corrected prior to pregnancy. Ventricular septal defect (VSD) was present in 2, also they had closure of the defect prior to pregnancy.

Among women with acquired heart disease, 40 (74%) were of rheumatic origin, 1 was dilated cardiomyopathy, 1 was Wolf Parkinson White, 1 case with heart failure, 1 partial AV block while 1 patient had complete heart block with Pacemaker implantation done prior to pregnancy. Four cases diagnosed as mitral valve prolapsus.

Mitral valve disease accounted for the majority of rheumatic heart disease. These included 23 (57.5%) cases with mitral stenosis and 26 (65%) with mitral incompetence. Fourteen cases (35%) had aortic incompetence and 11 (27.5%) cases tricuspid incompetence. Aortic stenosis accounted for 4 (7.4%) cases, tricuspid stenosis in 1 case, pulmonary incompetence in 1 case, pulmonary stenosis in 1 case. Multiple valve involvement was common. Two women had mitral valve replacement surgery while 5 women had mitral valve balloon dilatation and Percutaneous Transilluminal Mitral Commisurotomy (MVBD and PTMC) before pregnancy.

The majority of the patients with heart disease were asymptomatic with respect to cardiovascular system. Eight patients were found to have dyspne, 3 had orthopne, 3 had cyanosis, 9 had tachycardia, 2 had tachypnea, 6 had pretibial edema and 4 patient had minimal rales of lung. Based on New York Heart Association Functional Classification (NYHA), 48 (88.8%) were in class I; 2 (3.7%) in class II; 2 (3.7%) in class III and 2 (3.7%) in class IV. Twentyeight cases had mitral incompetence and 16 had mitral stenosis in class I. Most frequent pathologies seen in other classes were also mitral incompetence and mitral stenosis.

Fourtyone cases delivered vaginally while 13 cases underwent cesarean section. Of 41 women 31 (75.6%) had entered spontaneous labor while 10 (24.4%) women had their labor induced and all inductions of labor were for obstetric reasons. Of the women with heart disease, 11 achieved spontaneous vertex delivery, 1 patient was delivered by applying forceps, 28 patients were delivered by vacum extraction and 1 patient had breech delivery. One women had spontaneous expulsion of dead fetus at 38 weeks gestation.

Cesarean sections were performed in 13 patients, indications of which included 4 cases cephalopelvic disproportion, 7 cases previous cesarean and 1 case with breech presentation and 1 elective cesarean.

All women in the study were taken prophylactic antibiotics Ampicillin 2 g iv and Gentamycin 80 mg iv 1 hour before and 6 hours after 2nd phase of the labor.

Among these women with heart disease, 7 had obstetric complications, 1 woman had medical complications. No maternal mortalities occurred. Obstetric complications included, 6 preterm labor, 1 EMR without chorioamnionitis. Medical complication encountered was 1 cases of cardiac failure.

Mean birthweight was 3037 ± 540 g (1500-4500). Weight of 6 newborn were below 2500 g and 4 babies weighted above 4000 g. There were 6 premature labor and 4 of these had infants weighting less than 2500 g. Two babies had intrauterine growth restriction (IUGR) of which 1 had 2250 g birthweight, 1 was 2300 g. Intrauterine death was occured in a patient at term.

Majority of infants (48) had > 2500 g birth weight and majority of babies (48) were delivered at term between 37-42 weeks gestation intervals. All of infants had good Apgar score at 5 minutes and neonatal intensive care unit admission was required for only 3 babies of whom 2 were 32 weeks, 1 was 30 weeks. Babies admitted to neonatal intensive care unit were send home without any complication.

Discussion

Pregnancy imposes an additional burden on the cardiovascular system, both in a normal woman as well as in the patient with cardiac disease. Most young women with heart disease do well during pregnancy. But pregnancy can affect the heart adversely and can cause significant morbidity and

mortality. Pregnancy brings the cardiac status down by at least one step.[7,8]

The incidence of heart disease in pregnancy ranges from 0.3% to 3.5%.[1] Hospital statistics from industrialised countries have shown a decrease in the incidence from 0.9% to 0.3% of all births and a 90% reduction in acquired heart disease with persistence of congenital heart disease.[9] Recent advances in the medical and surgical treatment of patients with congenital heart defects has resulted in an increased survival to reproductive age. In developing countries rheumatic heart disease is still the most common lesion in pregnant patients with cardiac disease.

In this study, frequency of heart disease in pregnancy was found to be 1.2%. The mean age of the patients was 29.8 years, the majority (83%) being less than 35 years of age. After 35 years the pregnant cardiac patient is more prone to cardiac failure, which becomes an important cause of maternal mortality.[10]

Rheumatic heart disease is now less common and congenital lesions are proportionately higher in Western countries. This decrease in the cases of rheumatic heart disease is probably a result of improvement in the standards of living and successful use of antibiotics.[10] Also improvement in pediatric surgical techniques and neonatal intensive care over the past 2 decades has allowed more patients with congenital heart disease to become pregnant.[11,12] However, this is in contrast to the reports in the developed countries; in this study there were more patients with rheumatic disease than congenital heart disease. Most common congenital lesions found were atrial and ventricular septal defects. Regarding rheumatic heart lesions, mitral stenosis is the most common rheumatic lesion followed by mitral incompetence and aortic valve disease.[13] But mitral incompetence was found to be the most common lesion followed by mitral stenosis in this study. This difference may be due to that the study is not reflect all of the population.

The risk of maternal morbidity and mortality is directly related to heart disease classification. In patients with class I and II, the risk of cardiac failure during pregnancy is 10% or less and the incidence of maternal mortality is 0.3%. With class III, the risk of cardiac failure is 80% and mortality may reach 7%. With class IV, cardiac failure is present in all patients and maternal mortality may reach 25%.[14] In this study, the majority of the women had good cardiac functional capacity. Fourtyeight patients (88.8%) were in class I according to NYHA classification; 2 (3.7%) in class II; 2 (3.7%) in class III and 2 (3.7%) in class IV, which is advanced cardiac failure. Only a few patients were under regular antenatal care. This is the possible explanation for some patients presenting in such severe condition. Most of the women booked in the 2nd trimester and had few antenatal visits.

Assisted vaginal delivery is the safest mode of delivery for women with heart disease.[15] Cesarean section is usually reserved for obstetric indications except in special situations where performing the Valsalva manoeuvre during vaginal delivery may be hazardous. For example, when the patient has Marfan's syndrome or coarctation of the aorta, since aortic dissection may occur. In this study, majority of women had vaginal delivery while 1 patient was delivered by applying forceps, 28 patients were by vakum extraction in order to shorten 2nd stage of labour. Thirteen patients had cesarean section.

The use of antibiotic prophylaxis to prevent infective endocarditis during labor is debatable. The incidence of bacteraemia during vaginal delivery is low (5%) and routine prophylaxis is unnecessary in uncomplicated deliveries.[16,17] Prophylaxis is not needed for cardiac lesions causing minimal risk such as isolated mitral valve prolapse and surgically corrected cardiac diseases with no residual lesion, and when the labor occurs more than 6 months after surgery. Patients with high risk were given selective prophylactic antibiotics 1hr before and 6 hrs after the labor and there was no subacute bacterial endocarditis reported in any patients.

Cardiac disease associated with pregnancy contributes significantly to maternal morbidity and mortality. In women with pre-existing heart disease, maternal mortality is about 1% in developed countries.[18]

According to the WHO, 23% maternal deaths are caused by cardiac disease.[19] High maternal mor-

tality (25-50%) is seen in aortic stenosis, pulmonary hypertension with reversed central shunt and Marfan syndrome with aortic involvement.[20] So the hazard is great enough to make pregnancy inadvisable.

Peripartum cardiomyopathy is also an important cause of maternal mortality. Peripartum cardiomyopathy most often occurs in women over the age of 30, tends to affect multiparas, those carrying twins, and those whose pregnancy is complicated by preeclampsia, during the last three months of their pregnancy or within 4-6 months of delivery. Peripartum cardiomyopathy has a 50% mortality rate within 5 years and a high probability of recurrence in subsequent pregnancies, which are therefore contraindicated.[18,21] In this study 1 patient had dilated cardiomyopathy. She and her baby with strict follow up and monitorization were send home without any complication. There was no maternal death in this study.

The fetus of the cardiac patient also faces increased risk. Intrauterine growth restriction and prematurity are the most commonly encountered fetal complications.[22] Same fetal complications were observed in this study. But, most infants weighed more than 2500 gms. Different studies on perinatal outcome in cardiac patients have reported a perinatal mortality rate of 1.3-4.5%.[10] In this study perinatal mortality was seen only one baby at term (1.9%).

In conclusion, most young women with heart disease do well during pregnancy. The risk of maternal morbidity and mortality is directly related to heart disease classification. Assisted vaginal delivery is the safest mode of delivery for women with heart disease. Intrauterine growth restriction and prematurity are the most commonly encountered fetal complications. The successful management of the pregnant women with cardiac disease relies on team care by the cardiologist, obstetrician, cardiothoracic surgeon, anesthetist, neonatologist, and the pediatric cardiologist.

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