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Heart Disease and Pregnancy: Result of Sixty-eight Cases

Ali Kolusarı[1], Şahin Zeteroğlu[2], Hanım Güler Şahin[1], Mansur Kamacı[1]

[1]Yüzüncü Yıl University Medical School, Department of Obstetrics and Gynecology, Van
[2]Bursa Acıbadem Hospital, Obstetrics and Gynecology, Bursa

Abstract

Objective: In this study, it was aimed to evaluate pregnant women who had been diagnosed cardiac diseae.

Methods: Sixty- seven (67) patients applied to the gynecology and obstetrics clinics of yuzuncu yil university faculty of medicine between December 1994 and December 2006 diagnosed as having pregnancy and cardiac disease were assesed retrospectively.

Results: Among the total 6852 obstetrical patients, 67 (0.98%) pregnant women who had cardiac disease were determined of the cases, 40.1% did not have any school education, 68.7 % lived in rural area and 74. 6 did not have any antenatal fallow. While 77.6% of cases were diagnosed when they were non-pregnant, only 15 (22.4) cases were determined to have cardiac disease during their last pregnancy. More than one valvular cardiac disease was present in some patients and a total of 97 cardiac diseases were determined in all pregnant women. Mostly diagnosed cardiac diseases were mitral stenosis and mitral insufficiency.

Conclusion: Cardiac diseases result in increase in maternal and fetal mortality and morbidity during pregnancy. These patients must be evaluated cardiologically before the gestation and the risks that might be caused by pregnancy should be explained to the patients.

Keywords: Pregnancy, heart disease.

Gebelik ve kalp hastalığı: Altmışyedi olgunun değerlendirilmesi

Amaç: Bu çalışmada kliniğimizde kalp hastalığı saptanan gebelerin değerlendirilmesi amaçlandı.

Yöntem: Yüzüncü Yıl Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Ana Bilim Dalı'nda Aralık 1994 –Aralık 2006 tarihleri arasında gebelik ve kalp hastalığı ile başvuran 67 hasta retrospektif olarak değerlendirildi.

Bulgular: Toplam 6852 doğum hastası arasında 67 kalp hastalığı olan gebe tespit edildi. (%0.98) Olguların %40.1'inin eğitimsiz, %68.7'sinin kırsal yerleşimli olduğu ve %74.6 olgunun antenatal takipsiz olduğu tespit edildi. Olguların %77.6'sında kalp hastalığı tanısı gebelik dışı dönemde koyulurken sadece 15 olgunun (%22.4) kalp hastalığı tanısı son gebeliği esnasında tespit edildi. Bazı hastalarda birden fazla kalp kapak hastalığı mevcut olup tüm gebelerde toplam 97 adet kalp hastalığı tespit edildi. Kalp hastalığı olan gebelerde en sık tespit edilen kardiak anomali mitral stenoz ve mitral yetmezlik idi.

Sonuç: Gebelikte kalp hastalıkları maternal ve fetal mortalite ve morbidite artışına yol açmaktadır. Bu hastaların mümkünse gebelik öncesi kardiyolojik olarak değerlendirilmesi, gebeliğin ortaya çıkaracağı risklerin hastalara açıklanması gerekmektedir.

Anahtar Sözcükler: Gebelik, kalp hastalığı.

Introduction

Approximately 1-3% of pregnancies are complicated by cardiac disease and this situation is responsible for 10-15% of maternal mortality.[1,2] As the incidence of acquired diseases such as rheumatic cardiac diseases decreases in developed countries, it is still a problem in developing countries.[3]

Correspondence: Ali Kolusarı, Yüzüncü Yıl Üniversitesi Tıp Fakültesi, Kadın Hastalıkları ve Doğum Anabilim Dalı,Van
e-mail: dralikolusari@yahoo.com

Mitral stenosis is the most frequent lesion in patients having pregnancy and rheumatic cardiac disease.[4] In a study performed in our country, rheumatic cardiac disease is observed in 60% of pregnancies having cardiac disease.[5]

Diagnosis for cardiac disease is harder depending on physiological changes during gestational period. Functional systolic is frequently seen and edema is observed in lower extremity during the gestational period.

Complaints for cardiac disease during pregnancy are progressive orthopnea, paroxysmal nocturnal dyspnea, hemoptysis, syncope occurred with exercise, chest pain, serious or progressive dyspnea. Findings of cardiac disease during pregnancy are cyanosis, digital clubbing, jugular venous distention, systolic murmur more than grade 3/6, diastolic murmur, cardiomegaly, arrhythmia, pulmonary hypertension diagnosis and stable doubling of second heart sound.[6]

Even though pregnant women having Class I and Class II cardiac disease do not have generally any problem during gestational period, maternal mortality rate is about 0-0.4% in this patient group and normal vaginal delivery should be preferred except for obstetric cesarean indications.[7,8] Maternal mortality varies between 4-7% in pregnant women having Class III and IV cardiac disease. Though pregnancy is not recommended for those patients, they should be closely followed by bed resting and even hospitalized if there is absolute pregnancy demand. Normal vaginal delivery should be preferred unless there are obstetric indications in those patients.[7,8]

In this study, it was aimed to evaluate pregnant women who had been diagnosed cardiac disease, to study their characteristics and to evaluate retrospectively.

Methods

Sixty-seven (0.98%) patients having cardiac disease among 6852 pregnant women who delivered in between December 1994 and December 2006 that applied to the Department of Gynecology and Obstetrics of Faculty of Medicine of Yüzüncü Yil University within this period were assessed retrospectively. All results of physical examination, electrocardiography (EKG) and echocardiography (ECO) performed by cardiology clinic for patients diagnosed for cardiac disease and had a cardiac disease history were recorded. For cases found pregnancy and cardiac disease after ECO, socio-demographical characteristics, previous deliveries, antenatal complications, intrapartum maternal and fetal results, delivery type and perinatal results are all recorded. Those terminated pregnancy due to high risk cardiac disease in early gestational weeks were not included into the study.

Results

Average age was found as 30.24 ± 7.19 (17-40) and parity was found as 2 (1-9) for patients. It was also observed that pregnant women delivered averagely in 37.10 ± 4.21 weeks (Table 1). It was established that 40.1% of cases were uneducated, 68.7% of them were from rural areas and 74.6% of them were found as antenatal non-follow. It was found in cases came for antenatal follow that 2 cases came in first trimester, 8 cases came in second trimester, 4 cases came once in third trimester and 3 cases came once in all trimesters. As 77.6% of cases were diagnosed cardiac disease out of the gestational period, only 15 cases (22.4%) were diagnosed cardiac disease during their pregnancy.

Table 1. Socio-demographical characteristics of cases with pregnancy and cardiac disease.

	Average +SD
AGE	30.24±7.19
Gravida	5.24±3.23
Parity	3.42±3.01
Abortus	.45±.71
Alive	2.84±2.64
Gestational week	36.36±4.32
Delivery week	37.10±4.21

Table 2. Echocardiography findings of pregnant women with cardiac disease.

Echocardiography Findings	N (%)
Mitral Stenosis	25(25.77)
Mitral Failure	28(28.87)
Aorta Failure	16(16.49)
Tricuspid Failure	14(14.43)
Tricuspid Stenosis	3(3.09)
Ventricular Septal Defect	3(3.09)
Aortic Stenosis	3(3.09)
Atrial Septal Defect	1(1.03)
Pulmonary Stenosis	1(1.03)
Dextrocardia	1(1.03)
Dilated Cardiomyopathy	1(1.03)
Mitral Valve Prolapsus	1(1.03)

In anamnesis taken during the first admission of pregnant women to the clinic, 9 patients were operated due to cardiac disease and 4 patients had congestive cardiac disease. As there was heart valve disease more than once in some patients, totally 97 patients were diagnosed as having cardiac disease. While rheumatic valve disease was seen in 60 (89.55%) patients, congenital cardiac disease was observed only in 5 (7.46%) cases. Most frequently diagnosed cardiac anomalies in pregnant women having cardiac disease were mitral stenosis and mitral regurgitation. One case also had dextrocardia (Table 2).

It was established that all pregnant women with cardiac disease were delivered by normal vaginal delivery if there were no obstetric indication. During normal delivery, it was observed that vacuum extraction was applied to 23 (34.3%) cases during the second period of delivery. Deliveries of only 17 (25.4%) cases with obstetric indications were ended by cesarean. It was seen that most frequent cesarean indication was fetal distress (Table 3). None of cases was found as multiple pregnancies. It was observed that 2 gr iv. ampicilline and 1.5 mg/kg im. or iv. gentamicin were applied to all pregnant women 1/2-1 hour before and 8 hours after the delivery. Perinatal mortality was not found and it was observed that 1st minute Apgar Score was 7.15 ± 2.09, 5th minute Apgar Score was 8.75 ± 2.17 and fetal weight was 2807.57 ± 921.13 in babies.

Table 3. Cesarean indications of cases with cardiac disease.

Cesarean indications	N (%)
Fetal distress	9 (52.9%)
Breech presentation	4 (23.5%)
Outflow obstruction	1 (5.9%)
Previous cesarean	2 (11.8%)
Preterm action+hand presentation	1 (5.9%)

Discussion

It was found that 0.98% of deliveries within specified periods in our clinic had cardiac disease. As this rate was found as 0.16-4.5% in literature, it was found as 0.27% in a study covering the years 1981-1987.[9] Bayhan et al was found it as 2.3%,[10] Karadadaş et al was found it as 2.4%.[11]

Incidence for death due to heart failure varies 8.5% and 12.3% according to different areas and dates.[12,13] Only a single maternal mortality was found in our cases (1.5%). There were mitral regurgitation, aorta stenosis and tricuspid failure in this case. It was found that the case applied to our emergency clinic as ex after acute pulmonary edema. It is suggested that obstetrician should work with cardiologist and with a heart vein surgeon if required in order to avoid maternal mortality and morbidity in pregnant women with cardiac disease.[9] Most frequent reasons for maternal mortality are congestive heart failure, infective endocarditis, reversing of existing shunt and arrhythmia.[14,15] Lao et al reported that they minimized maternal mortality rate by strict follow in their series and termination at early gestational weeks of chosen cases.[16]

Prophylaxis is suggested before the intervention made to patients with cardiac disease in order to protect against infective endocarditis.[9,15] The golden standard against infective endocarditis is 2 gr iv. ampicilline and 1.5 mg/kg im. or iv.

gentamicin. It is suggested to use 1 gr iv. vancomisinin and 1.5 mg/kg iv or im gentamicin for individuals having penicillin allergy.[17] Injections are made 1/2-1 hour before and 8 hours after planned deliveries.[14]

In our clinic, similar prophylaxis protocol was applied. We applied prophylaxis to all of our cases. There were no cases that we met with infective endocarditis. Prophylaxis was applied to all patients in a series of 50 patients by Bayhan et al and endocarditis was not observed in any case.[10]

Delivery and early postpartum period are risky periods especially for patients with cardiac disease. There is a 10-65% increase in heart beating volume in labor and during the delivery. It raises the load of heart which is already working with a limited capacity. But it should be remembered that cardiac disease is not a cesarean indication itself.[18] Bhatla et al found cesarean rate as 20.29% in 293 pregnant women complicated with cardiac disease.[19] Shime et al observed primary cesarean rate as 21.8% in pregnant women with congenital cardiac disease.[15] The cesarean rate was reported as 32.5% in the series of 86 pregnant women by Madazlı et al.[20] This rate is 25.4% in our study group and shows a similarity with the literature. As Madazli et al reported preeclampsia and dystocia as the most frequent cesarean indications, the most frequent cesarean reason was fetal distress in our series. As same researchers used forceps most frequently (24%) in intervened deliveries, we mostly used vacuum extraction (34.3%) as an intervention method.

Progress of heart surgery enabled people with complex heart anomalies to reach a life quality as able to deliver. Nowadays, an important rate for cases with cardiac disease and pregnancy in developed countries is congenital heart anomaly. As the rate of cases with congenital heart anomaly was 3.5% in the study made by Madazlı et al, this rate was 7.46% in our study.[20] Incidence of congenital cardiac disease in babies of mothers having congenital cardiac disease is reported as 2.6-17.9%.[21,22] No cardiac disease was observed in babies during perinatal period in our study.

In a study made by Karadadaş et al,[11] 90 of 103 pregnant women got diagnosis before pregnancy and 13 cases got diagnosis during pregnancy; two of these 13 cases had mitral stenosis, two of them had mitral regurgitation, three of them mitral valve prolapsus and four of them had cardiac conduction disturbances. 52 cases in our study group got diagnosis before pregnancy, 15 cases got diagnosis during last pregnancy. In six of the latter group had mitral regurgitation, five of them had aortic valve regurgitation, one of them had atrial septal defect, one of them had pulmonary stenosis and one of them had tricuspid regurgitation.

Conclusion

Cardiac diseases during pregnancy causes increase maternal and fetal mortality and morbidity. It is required to examine these patients cardiologically before pregnancy and to explain to patients the risks that may occur due to pregnancy. During delivery and in interventions, it is required to monitor patient closely and to perform endocarditis prophylaxis to patient.

References

1. Klein LL, Galan HL. Cardiac disease in pregnancy. *Obstet Gynecol Clin N Am* 2004; 31(2): 429-59.
2. Gei AF, Hankins GD. Cardiac Disease and Pregnancy. *Obstet Gynecol Clin N Am* 2001; 28(3): 465-512.
3. Ray P, Murphy GJ, Shutt LE. Recognition and management of maternal cardiac disease in pregnancy. *Br J Anaesth* 2004; 93(3): 428-39.
4. Desai DK, Adanlawo M, Naidoo DP, Moodley J, Kleinschmidt I. Mitral stenosis in pregnancy: a four-year experience at King Edward VIII Hospital, Durban, South Africa. *BJOG* 2000; 107(8): 953-8.
5. Cengiz C. Gebelik ve Kalp hastalığı. *Yeni Tıp Dergisi* 1995; 12: 101-3.
6. Sendag F, Cosan Terek M, Gundem G. Kalp hastalığı olan gebelere yaklaşım. *Klinik Bilimler&Doktor* 2001; 7(6): 864-8.

7. McFaul PB, Doman JC, Lamki H, Boyle D. Pregnancy complicated by maternal heart disease. A review of 519 women. *Br J Obstet Gyneacol* 1988; 95(9): 861-7.
8. Sullivan JM, Ramanathan KB. Management of medical problems in pregnancy: severe heart disease. *N Engl J Med* 1985; 313(5): 304-9.
9. Askar N, Yucebilgin MS, Ulukus M, Panahi A. Kalp hastalıklı gebelerde maternal ve perinatal morbidite ve mortalitenin araştırılması. *Ege Üniversitesi Tıp Fakültesi Dergisi* 1989; 28: 1239-45.
10. Bayhan G, Ülgen S, Yalinkaya A, Özdoğru A, Yayla M, Erden AC. Gebelik esnasında kalp hastalağı: 50 olgunun değerlendirilmesi. *Perinatoloji Dergisi* 2000; 8(1): 14-8.
11. Karadadaş N, Şendağ F, Kilavuz H, Ulukuş M. Ege Üniversitesi Kadın Hastalıkları ve Doğum Anabilim Dalında 1990-1997 yılları arasındaki kalp hastalıklı gebelerin değerlendirilmesi. *Ege Tıp Dergisi* 1999; 38(1): 17-20.
12. Irish Medical Association Maternal Mortality Committee Annual Reports.Incidence for death due to heart failure between 1964 to 1977 years. Dublin-Annual Reports; 1982.
13. Hibbard LT. Maternal mortality due to cardiac disease. *Clin Obstet Gynecol* 1975; 18: 27-36.
14. Clark SL. Cardiac disase in pregnancy. *Obstet Gynecol Clin North Am* 1991; 18(2): 237-56.
15. Shime J, Mocarski EJ, Hastings D, Webb GD, McLaughlin PR. Congenital heart disease in pregnancy: Short and long-term implications. *Am J Obstet Gynecol* 1987; 156(2): 313-22.
16. Lao TT, Sermer M, MaGee L, Farine D, Colman JM. Congenital aortic stenosis and pregnancy-A reappraisal. *Am J Obstet Gynecol* 1993; 169(3): 540-5.
17. Seaworth BJ, Durack DT. Infective endocarditis in obstetric and gynecologıc practice. *Am J Obstet Gynecol* 1986; 154(1): 180-8.
18. Robson SC, Hunter S, Boys RJ, Dunlop W. Serial study of factors influencing changes in cardiac output during human pregnancy. *Am J Physiol* 1989; 256: 1060-5.
19. Bhatla N, Lal S, Behera G, Kriplani A, Mittal S, Agarwal N, et al. Cardiac disease in pregnancy. *Int J Gynaecol Obstet* 2003; 82(2): 153-9.
20. Madazlı R, Ceydeli N, Tustas E, Sen C, Aksu F. Kalp hastalığı ve gebelik olgularının irdelenmesi. *Perinatoloji Dergisi* 1999; 7(1): 31-5.
21. Nora JJ, Nora AH. Update on councelling the family with first degree relative with a congenital heart defect. *Am J Med Genet* 1988; 29(1): 137-42.
22. Nora JJ, Nora AH. Maternal transmission of congenital heart disease: new recurrence risk figures and the questions of cytoplasmic interitance and vulnerability to teratogens. *Am J Cardiol* 1987; 59(5): 459-63.