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CARDIOVASCULAR CONCERNS AND PREGNANCY: ANAPPROACH TO CARDIAC SURGERY DURING PREGNANCY

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ABSTRACT

The cardiovascular system is go through changes during pregnancy,changes may put mothers and fetus life in danger.Heart surgery rarely occur during pregnancy but in special and necessary conditions.This surgery cause problems for mother , fetus and medical team and it is necessary to make special measures for mother and fetus to get better results. This study examine all cases during a 3 year, with giving special consideration into surgeries have be done on pregnant women.

Method

This is a case series study on pregnant women who admitted in heart center of pregnant women in Shahid Madani hospital in 2013up to now (clinic and hospital section)and all heart valve surgery was done during pregnancy .Descriptive statistics are used to describe the basic features of the data in a study. And data were analyzed using IBM SPSS 21.0 statistical software. Amount of P less than 0/05 will be considered significant.

Results

150 pregnant women with mean age 9/61±58/30 (minimum 19 and maximum 48 years old) and mean gestational age 75/12±23/23 (minimum 5 and maximum 39 weeks) were enrolled in this study.Eisner Manger , Thrombosis , syncope , cardiomyopathy , aortic aneurysm , congenital anomalies are the main reason of hospitalization of pregnant women during study .Among the subjects, 10 pregnancy cases were observed after cardiac valve surgery.

Conclusion

Pregnant womenwith heart disease do remain at risk for other complications includingheart failure, arrhythmia, and stroke. Optimum careof these potentially complicated pregnancies can only be achievedby a combined approach by cardiologists and obstetricians in specialistcenters with an understanding of the obstetric and cardiac complicationsthat canarise.

Keywords: Cardiovascular Disease, Pregnancy, Cardiac Surgery

Introduction

The cardiovascular system is go through changes during pregnancy, which these changes are necessary for a successful pregnancy and give birth to a healthy baby. But some changes such as increase in, heartbeat , cardiac efficiency and blood volume and also decrease in resistance of peripheral vessels which changes of these indexes cause increase of heart hemodynamic load , so that pregnancy along with changes of mentioned heart indexes can lead to outbreak or escalation of symptoms of underlying cardiac disease and put mothers and fetus life in danger(1-3).On the other hand 2 percent of pregnancies are accompanied by possibility of cardiovascular disease occurrence which put mother and fetus in danger . While many of these mothers finished their pregnancy selfly,Precise diagnostic and therapeutic evaluation is essential before pregnancy.Number of these patients are diagnosed during pregnancy by eco cardiagraphyand in order to avoid an acute event for the mother or the fetus, echocardiography and other tests are needed for accurate examination. And also pregnancy is categorized in terms of possibility of having risk in order to eliminate risk factors risk aversion in terms of riskiness and risk factors.If the mother has any background of stroke , arrhythmia ,blockage of left heart arteries , sever narrowing of aortic valve and mitral valve (under 1 centimeter square) , there is a possibility of life-threatening risk for mothers and they are ordered for termination of pregnancy(3-4).

If mother has one of the risky factors there is possibility of 27 percent that she is in serious danger and if she has

several risky factors she will be in danger with 75 percent possibility. And she must be under intensive care and or her pregnancy will be eliminated (5,6). Birth control of such mothers should be perform by expert team include midwife who have experience in high- risk conditions , cardiologist and anesthesiologist and gynecologist(5).Many natural symptoms of pregnancy imitates the heart disease symptoms such as lightheadedness an dizziness – shortness of breath – peripheral edema and even syncope and etc.And sometimes congenital disease or rheumatic valvular disease is discovered for first time during pregnancy (7, 1).So that pregnancy is so dangerous in some patients , and it is necessary to perform complete diagnostic examination before taking action for pregnancy , and if it is needed essential therapeutic and counseling measures perform . Heart surgery rarely occur during pregnancy but in special and necessary conditions this surgery cause problems for mother , fetus and medical team and it is necessary to make special measures for mother and fetus to get better results(8). This study examine all cases during a 3 year, with giving special consideration into surgeries have be done on pregnant women.

Method

This is a case series study on pregnant women who admitted in heart center of pregnant women in Shahid Madani hospital in 2013up to now (clinic and hospital section)and all heart valve surgery was done during pregnancy . In order to study first necessary for mothers who announced their consent in study .A questionnaire was given which was designed base on goal of study and include demographic data of patients , type of valves surgery , previous delivery type , medical and medicine background of patients , complications caused during and after surgery – type of delivery – death of mother and baby which was completed by interview and observing of patients 'file .Descriptive statistics are used to describe the basic features of the data in a study. And data were analyzed using IBM SPSS 21.0 statistical software. statistical methods (mean ±standard variation and frequency – percent) and chi-square test in order to examine relationship between treatment and maternal and fetal- neonatal outcomes . Amount of P less than 0/05 will be considered significant.

Result

150 pregnant women with mean age 9/61±58/30 (minimum 19 and maximum 48 years old) and mean gestational age 75/12±23/23 (minimum 5 and maximum 39 weeks)were enrolled in this study.24 of them had cesarean delivery and 3 natural delivery and 18 abortion therapy . And also there was one case of twins pregnancy among pregnant women .Rest of cases after medicine care either were released or transferred to women ' s specialized hospital .EisnerManger , Thrombosis , syncope , cardiomyopathy , aortic aneurysm , congenital anomalies are the main reason of hospitalization of pregnant women during study .Among the subjects, 10 pregnancy cases were observed after cardiac valve surgery (Table 1).

During the study, three cases of maternal deaths were observed with Eisnermanger, ayurvedic dyslexia and PTE. After phone call tracking after discharge no maternal death was reported.

Table1: Frequency of diagnosis of all patients

VSD 14Repair	ASD13Repair	Mitral regurgitation	Tetralogy Fault	SeverAI12	Unstable Angina	SeverPAH11	Typical Apical HCM10	MVP8+TR9	Cardiogenic shock	PPH7	MS5+AF6	anorysmiret	AVR4,MVR	Congenital anomaly	Epstein-Barr	PTE3	WPW2	Angina pectoris	Sonic tachycardia	Aortic failure and	Background of MVR1	cardiomyotap	Final diagnosis
2	5	40	1	1	1	1	1	1	1	1	1	5	3	5	1	1	1	10	8	4	6	4	frequency
1.9	4.9	38.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	4.9	2.9	4.9	0.9	0.9	0.9	9.6	7.8	3.9	5.8	3.9	percent

1. Mitral valve replacement (MVR),
2. Wolff-Parkinson-White (WPW),
3. pulmonary thromboendarterectomy (PTE),
4. Tricuspid valve regurgitation (TVR),
5. Aortic valve replacement(AVR),
6. Mitral valve stenosis(MS),
7. Atrial fibrillation(AF),
8. Primary pulmonary hypertension(PPH),
9. Mitral valve prolapse(MVP),
10. Tricuspid regurgitation (TR),
11. Hypertrophic cardio myopathy(HCM),
12. Pulmonary arterial hypertension(PAH),
13. Aortic insufenshy
14. Atrial septal defect (ASD),
15. Ventricular Septal Defect(VSD)

10 cases with background of previous surgery include 6 cases of MVR , 1 case TR and 3 case with MVR background , AVR and 5 cases with pregnancy after recovery of ASD and 2 cases with pregnant recovery of VSD were reported in this study

Conclusion

Diagnosis and timely treatment of heart disease during pregnancy is very important.And some who are considered as high-risk pregnancy should avoid pregnancy or termination of pregnancy is advised by the cardiologist and gynecologist.Performing a cardiopulmonary bypass surgery during pregnancy, even under ideal conditions, is associated with fetal distress, intrauterine growth retardation, and loss of an infant due to increased blood flow and warm perfusion.(9,10). If it is preferred, surgery should be postponed until the fetal maturity. Cardiopulmonary bypass surgery should only be done in the absence of response to medication or to the development of dangerous cardiac symptoms (pulmonary congestion)(10,11). In the case of surgery for valve lesions during pregnancy, valve repair is usually preferable.Cardiac surgery is naturally risky for both, the

mother and fetus with mortality rates near 10% and 30%, respectively. Factors related with fetal morbidityand mortality in cardiac surgery in pregnancy are: early gestational age, emergency surgery, maternal ,comorbidities and use of hypothermia.

For some conditions, percutaneous cardiac intervention offers effective therapy with far less risk to the mother and her fetus (12). For others, cardiac surgery, including procedures that dictate the use of cardiopulmonary bypass, must be amused to save the life of the mother (11,13). Most anesthetic agents have no teratogeniceffectInhalational agents and other CNS depressantsmay have increased effectiveness(14). Given the extreme risks to the fetus, if the patient is in the third trimester, strong consideration should be given to delivery before surgery involving cardiopulmonary bypass.(15)Keys to success in cardiac surgery in pregnancy are to be at earlier gestational ages, when this is not feasible, modifications to the perfusion protocol including higher flow rates, norm thermic perfusion, pulsatile flow, careful monitoring , team approach and the use of intraoperative external fetal heart rate monitoring should be considered(15,16) .In our study we reported 10 cases with a history of previous surgery , 6 cases witha history of previous MVR, 1 item with a history of previous TR and 3 cases with a history of previous AVR, MVR .There are also 5 pregnancies after ASD repair and 2 cases after VSD repair. Women with congenital heart disease now comprise the general of pregnant women with heart disease seen at referral centers.

The next largest group includes women with rheumatic heart disease in our study.

In the absence of pulmonary hypertension, pregnancy, labor and delivery are well tolerated 2nd to attenuation of volume overload by peripheral vasodilation. However arrhythmias, ventricular dysfunction, and progression of pulmonary hypertension may occur, especially when the shunt is large or when there is pre-existing elevation of pulmonary artery pressure(12,17-19).

In ASDs, paradoxical embolization may be encountered if systemic vasodilatation and/or elevation of pulmonary resistance promote transient right to left shunting (20).

With the exception of patients withEisenmenger syndrome, pulmonary vascular obstructive disease,and Marfan syndrome with aortopathy, maternal death during pregnancyin women with heart disease is rare. However, pregnant womenwith heart disease do remain at risk for other complications includingheart failure, arrhythmia, and stroke. Optimum careof these potentially complicated pregnancies can only be achievedby a combined approach by cardiologists and obstetricians in specialistcenters with an understanding of the obstetric and cardiac complicationsthat canarise.

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1. Thromboendarterectomy

2. Mitral valve replacement

3. Tricuspid regurgitation

4. Aortic valve replacement

5. Atrial septal defect

6. Ventricular Septal Defect