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HYPERTENSION, HYPERLIPIDEMIA AND COMPLICATIONS IN PREGNANCY

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ABSTRACT Hypertensive disorders in pregnancy with incidence of 3/7% are one of the most severe complications. Cardiovascular diseases are apparent in 2% of the pregnancies where as physiologic changes during pregnancy intensifies the underlying disorders and adds to the severity of problem. Researches indicate that pregnant women with heart disease will arise unfavorable maternal and fetal outcomes with increased risk of abortion, intra uterine fetal death, preterm labor and intra uterine growth retardation. This study aims to magnifies the out comes of accompaniment of cardiovascular diseases, pregnancy, hypertension and hyperlipidemia. This is a retrospective descriptive study in which patient records of 2450 pregnant women referring from the heart hospitals or hospitals in other city to Women's Hospital from 2008-2010 were assessed. Data was gathered by medical files and analyzed by SPSS soft ware. In this study from 2450 pregnant women 1100 patient before pregnancy had high blood pressure and hyperlipidemia compared to normal patients at risk of heart disease. Incidence of moderate Aorta Stenosis (AS) was about 45.5 % (10cases), Mitral valvuloplasty (MVP) about 22/73% (5cases) and Mitral stenosis 19/17% (5 cases); two patient with MR+MS had underwent valvuloplasty. 87% (17) of the mothers were hospitalized as the result of hypertension, 9/1% for tachycardia and dyspnea and 18/2% showed mixed form of theses complains. They were using hydralazine and methyldopa as anti hypertensive drugs. Only 10% of the patients had history of anticoagulant using during pregnancy**.** We found only one patient with pulmonary stenosis (PS) in these patients before pregnancy and 44% of patient have hyperlipidemia and only 12% had history of Anti-lipid using before pregnancy. Women with hypertension and hyperlipidemia and previous heart disease showed many serious complications during pregnancy and high fetal mortality compared with healthy women pregnant. Proper and on time care giving and support during pregnancy is dependent on the accurate diagnosis of the heart disease; any health problem should be seriously noted.

KEYWORDS*: hypertension, hyperlipidemia, cardiovascular diseases, pregnancy, complication.*

INTRODUCTION

Blood pressure drops in early gestation and by the second trimester it is usually 10mm Hg lower the baseline (Newstead et al., 2007). This is induced by reduction in the peripheral resistance due to systemic vasodilatation and creation of a low resistance circuit in the gravid uterus. The mechanism of the vasodilatation is not clearly understood but decreased vascular

responsiveness to the pressure effects of angiotension II and nor epinephrine (MacGillivary, 2000) is a major factor. Hypertension in pregnancy is defined as a rise in blood pressure of at least 30 mm Hg of the systolic or 15 mm Hg of the diastolic blood pressure above pre-gestation baseline. If previous blood pressure is unknown, a reading of 140/90 or above after the 20th week of gestation is considered abnormal. The U.S. joint National Committee for the Prevention, Detection, Evaluation and Treatment of High Blood Pressure (Malberg et al., 2007) and the International Society for the Study of Hypertension in Pregnancy (Pipkin, 2001) recommend using Korotokoff Phase V (disappearance of the sound) for determining the diastolic blood pressure. In contrast, most European physicians use phase IV (muffling of the sound). Hypertensive disorders in pregnancy with incidence of 3/7% is one of the most severe complications (Anonymous, 2011) which pose a great clinical importance as being related with maternal and fetal mortality (Anderson, 2007). Five types of hypertensive disorders may occur during pregnancy: Gestational hypertension, preeclampsia, eclampsia, super imposed preeclampsia and chronic hypertension (Newstead et al., 2007; Pipkin, 2001; Poole, 2000). Annually 50000 of pregnant women are sentenced to death all over the world. Cardiovascular diseases are apparent in 2% of the pregnancies (Anderson, 2007; Liouyd and Lewis, 1999) whereas physiologic changes during pregnancy intensifies the underlying disorders and ads to the severity of problem. Researches indicate that pregnant women with significant heart disease will arise unfavorable maternal and fetal outcomes (Anderson, 2007; Scott et al., 1999) with increased risk of abortion, intra uterine fetal death, preterm labor and intra uterine growth retardation; on the other hand fetal death up to 20-40% and 25-50% of maternal mortality are results of servers and persisting conditions comparing to low maternal mortality rate of 1-5% in less distressful cases (Manten et al., 2007; Cuningham and Gantfamd leveno, 2001); Besides result of a research guided by American specialists' clinic verified adverse effect of maternal cardiovascular instability on fetal outcome in which a higher incidence of preterm labor, low birth weigh and intrauterine growth restriction (IUGR) was detected (Alicia and Rado, 2002). It is an obvious that women with cardiovascular disease and hypertension will spend a more stressful pregnancy whereas it is difficult to precisely anticipate the scope of the peril which highly necessitates accurate and continuous pregnancy care; this study aims to magnifies the out comes of accompaniment of significant cardiovascular diseases, hypertension and hyperlipidemia.

MATERIALS AND METHODS

This is a retrospective descriptive study in which patient records of 2450 pregnant women referring to Women's Hospital from 2008-2010 were assessed. 25 cases of pregnant patients with hypertension, hyperlipedma and previous cardiovascular diseases whom visited by cardiologist and confined their heart diseases according to the echocardiography enrolled to the study. Our scales were presence of hypertension and hyperlipidemia according to the medical examination and biochemistry and echocardiography. Inclusion criteria are as below:

1. History of Blood pressure or current plod pressure ≥140/90 mm Hg after 20 gestation week and proteinuria ≥ 300 mg 24 hour or ≥1+ dipstick
2. Previous or pregnancy onset cardiovascular disease verified by a cardiologist.
3. History of hospitalization in high risk pregnancy ward.
4. Patients have hyperlipidemia in lab study.

Previous underlying disorders, chronic blood pressure, diabetes, nephropathy, collagen vascular disease and hyperthyroidism were considered as exclusion criteria (Conde Agudelo and

Belizan, 2000). Checklists were filled for all the cases which included demographic data in the first part and were accompanied with pregnancy changes and difficulties during labor; the third part was due to neonatal characteristics. If there was any doubt about the information, a call contact was used. SPSS version 17.0 (SPSS, Chicago, IL, USA) was used for statistical analysis and $P<0.05$ were considered statistically significant. Continuous variables with normal distribution were presented as mean ± SD.

RESULTS

Mean of the maternal age was about 25/28 ±3.20 years with minimum and maximum range of 20 and 38 years. Gravidity was different form 2 to 6 among the participants and parity was about 0-3. The average gestational age was 32-34 weeks with minimum and maximum age of 28 and 38. Cesarean delivery was done for 16 of the pregnancies as the result of fetal bradycardia (21/4%), placental abruption (11/1%) and abnormal bleeding (9/1%). Normal vaginal delivery had a percentage of about 26/3% .Mean of birth weight was 2000-2300gr. Most of the neonate had apkar score of about 7 or less who needed primary resuscitation.

In this study from 2450 t pregnant women 1100 before pregnancy had high blood pressure and hyperlipidemia compared to normal patients at risk of heart disease. Incidence of moderate Aorta Stenosis (AS) was about %45 (11 cases), MPV about 22/73% (5cases) and moderate Mitral stenosis 18/18% (4 cases); two patient with MR+MS had underwent valvuloplasty. 87/% (17) of the mothers were hospitalized as the result of hypertension, 10/1% for tachycardia and dyspnea. Through call contact it was revealed that any of the women were not awarded of the threats of their illness during pregnancy.

64/5% (11) of the neonates were male while there were 12 female neonates (67/4%). There were just two still births (both of them were male/ cesarean delivery) with birth weigh of 800 grams and one of them with diaphragmatocele and the other one with omphalocele. There were 4 cases (32/5%) of Hyaline Membrane Disease (HMD), 2 cases of undescended testicle and diaphragmatocele, and 2 cases were burnt with foot defects. Most women needed to receive medical therapy in addition to limit of physical activity. The most frequently used drugs for manage of the heart rate were β-blockers. These have been proved to be effective in controlling the heart rate and thereby reducing the risk of pulmonary edema (Cruickshank, 2010; Al Kasab et al., 1990). In our study most of patients used β-blockers and anti androgenic drugs for hypertension treatment.

According to the results 10 patients (38.4%) had a history of chronic heart failure and 14 patients (63.6%) had valvular diseases. Unfortunately in this study any of the women according the medical records and asking via phone call had not received adequate training and enough information about their pregnancy outcome from health services and theirs doctors. Before pregnancy 44%(880) of patient blood lipids to increase significantly and only 12% had history 9of Anti lipid using during pregnancy.

DISCUSSION

Normal pregnancy related with adaptive cardiovascular changes. Pregnant women with cardiac disease may be powerless to tolerate these changes even with optimal medical therapy, and life-threatening complications can be happen. Commissurotomy or valve replacement during pregnancy is very high-risk trial both for mother and fetus. Percutaneous valvuloplasty is a valid alternative to cardiac surgery. Pregnancy in patients with MVP is controversy and many expertise in this area , committed to these patients not be pregnant, but there is a evidence that these patients had a successful pregnancy with special medical treatment (Ramondo et al.,1998; Naghsh Bandi and Shah Gheibi, 2003). According to the texts and articles

contraindications to pregnancy include severe pulmonary hypertension or Eisenmenger's syndrome, cardiomyopathy with New York Heart Association (NYHA) Class III or IV symptoms, history of peripartum cardiomyopathy, severe uncorrected valvular stenosis, unrepaired cyanotic congenital heart disease, and Marfan syndrome with an abnormal aorta (Siu et al., 1997). Women with aortic mild or moderate mitral stenosis or history of previous heart surgery are able to tolerate pregnancy with regular treatment and accurate prenatal care (Yaghoubi et al., 2009). It is difficult for a pregnant woman to tolerate severe form of MS and AS and abortion therapy is usually suggested (Evangelico et al., 2002). A healthy woman without any cardiovascular disability will arise the risk of coronary heart disease about 2 times and Ischemic heart disease about 1/5 times when her pregnancy is complicated with hypertension (Baumwell and Karumanchi, 2007) obviously it will be more dominant in the presence of cardiovascular disorders. Normal vaginal delivery (NVD) is the best choice for pregnant women with cardiovascular disease; caesarean sections were mainly due to fetal distress diagnosed by abnormal fetal heart rate patterns (Setaro and Caulin-Glaser, 2004). May be high cardiovascular changes during labor and delivery (both method) and less amount of bleeding during NVD comparing to cesarean delivery changes it into the preferred delivery method. In this study cesarean delivery was more common that may be related to insufficient placental perfusion. In this study the most common heart diseases along with pregnancy and hypertension was moderate AS, besides MPV was in the second rank and moderate MS+MR and moderate MVP+MR were both the third and 34% have hyperlipidemia. Heart failure, hypertension, and tachycardia were the three essential complications during pregnancy which were similar to the results of Nagshbandi and co workers study in Sanandaj, 2004. Another study in America (2000) showed a high incidence of MVP during pregnancies attacked by preeclampsia in which tachycardia was prominent and cases had been treated by propranolol; these patient may also experience high stress, tremor and chest pain (Conde Agudelo and Belizan, 2000). In our study we found only one person with sever preeclampsia with ejection fraction <40 %. We had one pregnancy with pulmonary stenosis which leads to a live birth with HMD who died after five days. Mean of birth weigh was 1790/62 ±310/24 which approves the direct relation among heart disease; preeclampsia, intra uterine growth retardation (IUGR) and low birth weigh (LBW) which is compatible with increased peripheral resistance and atherosclerosis in theses population (Belmin, 2000). In Canada results of a research indicated that neonatal morbidity and mortality was 18% in pregnancies with heart disease comparing to 7% in normal pregnancies, besides birth weigh was a bout 700grs lower in the first group (Setaro and Caulin-Glaser, 2004). Results of current study are a vital representative of pregnancy complications which leads to preterm labor, low birth weigh, still birth, low apgar score and fetal brady cardia in pregnancies having two major effecting factor (Siu et al., 2001). However to establish this facts require to done a cohort study by considering the maternal outcomes after delivery to highlight latter maternal disabilities.

Considering the underlying risk factors of heart disease and early detection of confounding conditions will play a great role in controlling the onset and reducing the mortality of theses patients during pregnancy; giving a clear insight of pregnancy outcomes to women with heart disease and improving their knowledge by regular consultation and training classes will have a great role in controlling morality and future morbidity .Cardiac risk factors such as prior cardiac events, prior arrhythmia, NYHA III or IV or cyanosis, valvular and outflow tract obstruction, myocardial dysfunction ,congestive heart

failure, congenital heart defect and maternal risk factors advanced maternal age, lifestyle choices medical history underlying conditions ,chronic conditions, such as diabetes, high blood pressure and epilepsy, increase pregnancy risks. A blood condition, such as anemia, an infection or an underlying mental health condition also can increase pregnancy risks (Siu et al., 2001; von Dadelszen et al., 2007). It seems it is necessary for cardiovascular screening of all women in reproductive age due to the high maternal and fetal mortality and morbidity. International American heart institute suggests that any women with even a slight heart disease should obey a special life style to combat the disorder which can come true by sufficient and regular training, support and health improvement programs; below are a series of health advices to help this group:

1- It is better for pregnant mothers with heart disease and high risk of hypertension to use calcium, Vita C and Aspirin from their second trimester of pregnancy as a mean of reducing maternal and fetal disabilities.

2-Balloon valvuloplasty is recommended for sever valve disease during pregnancy to prevent more unwanted outcomes.

3-Mothers with mild and severe MS and AS should be regularly monitored for fetal and maternal well-being (Alicia and Rado, 2002; Conde Agudelo and Belizan, 2000).

4- It is better to have valvuloplasty in cases with valve stenosis before pregnancy.

5It is better to have valvuloplasty in cases with valve stenosis before pregnancy.

6- It is better for women before pregnancy and during pregnancy for complications of, hyperlipidemia and atherosclerotic disease to be taught.

ETHICAL ISSUES

Written informed consent was obtained from the patients for publication of this study.The study has been approved by the local ethics committee.

CONFLICT OF INTERESTS:

Authors declare that there is no conflict of interest

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