

The Effect of Valvular Heart Diseases on Maternal and Fetal Outcome of Pregnancy

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ABSTRACT:

BACKGROUND:

Profound hemodynamic alterations occur during pregnancy, labour and in the postpartum period. These changes can adversely affect both maternal and fetal outcome, if a women encounter a valvular heart disease during her pregnancy.

OBJECTIVE:

We try to evaluate the effect of valvular heart disease on maternal and fetal outcome of pregnancy.

METHODS:

This is a cross section descriptive study, carried out in Baghdad teaching hospital, throughout the period from September 2007 to October 2008. Seventy eight pregnant women with valvular heart diseases, in labour, were enrolled in this study. Their medical and obstetrical records were reviewed on admission. We looked for maternal outcome after delivery (method of delivery, heart failure, arrhythmia, need for medication and period of hospitalization), additional to fetal outcome (prematurity, viability and birth weight).

RESULTS:

Mitral valve disease is predominate valvular heart disease in pregnancy, most of them of mild severity. All maternal and fetal outcome parameters adversely increase among pregnant women with valvular heart diseases.

CONCLUSION:

Valvular heart diseases carried a higher risk for both mother and fetus. The risk related directly to severity of valvular heart diseases.

KEY WORDS: valvular heart disease, pregnancy, maternal outcome, fetal outcome.

INTRODUCTION:

Profound hemodynamic alterations occur during pregnancy, labour and in the postpartum period 1. These changes begin during the first five to eight weeks of pregnancy and reach their peak late in the second trimester 2. Blood volume increases by 40-50% 3, cardiac output by 30-50% 4, heart rate by 10-15 beat/minute 5 in addition to rise in stroke volume and decline vascular peripheral resistant 6,7 These changes return to pre-pregnancy baseline within 3-4 weeks following delivery 8. Pregnancy has a deleterious effect on stenotic lesion a favorable on regurgitated lesions 9. Valvular heart diseases in pregnancy were found to increase risk of both maternal and fetal morbidity and mortality 10. The management of valvular heart diseases should ideally begin before conception, under multidisciplinary

consultant team work. We tried in this study to evaluate the effect of valvular heart diseases on the maternal and fetal outcome of pregnancy.

PATIENTS AND METHODS:

This is a cross section descriptive study in which prospectively evaluates the maternal and fetal outcome in pregnant women with valvular heart diseases, in Baghdad Teaching hospital from September 2007 to October 2008, during this period 8271 women give birth in our labour ward, seventy eight of them with valvular heart diseases. All seventy eight patients had an echocardiogram proved the diagnosis and determine severity of the valve lesion. We review their medical and obstetrical records on admission and follow up them after delivery looking for maternal parameters (method of delivery, development of heart failure exacerbation or new onset arrhythmias, starting or increasing medication to control their heart problem) in addition to fetal outcome (prematurity, viability and birth weight). Our labour ward protocol for women with valvular heart diseases involves special percussions in their position, avoidance fluid overload and urinary catheterization,

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VALVULAR HEART DISEASES AND PREGNANCY

antibiotic prophylaxis and proper analgesia when required. The cardiologist was participated in the management of all our patients during labour. Decision regarding method of delivery was shared with the cardiologist and Obstetrician on individual case. The patients were divided into groups according to predominate valvular heart disease,

further classification according the severity of lesion, was done. The data were analyzed by SPSS version 10 (USA) using Fisher exact probability test. P-

Value of less than 0.05 considered statistically significant.

RESULTS:

Obstetrical and medical characteristics are shown in table-1. Majority of our patients were multigravida (78.2%), had standard antenatal care (70%). Two patients developed congestive heart failure during this pregnancy before labour and only one woman undergone aortic valve replacement during present gestation.

Table 1: Obstetrical and medical characteristics of women with valvular heart diseases

Characteristics	Patients No. (%)
primigravida	17 (22%)
multigravida	61 (78%)
Standard antenatal care (combined care- consultant level)	54 (70%)
Below standard antenatal care	24 (30%)
Congestive heart failure in present gestation and before labour	2 (2.5%)

Mitral valve prolapsed with regurgitation is the commonest lesion among our patients as appear in table -2.

Table 2 : Distribution of patients according to type and severity of valve lesions

Type and severity valve heart diseases	Patients (%)
Mitral valve prolapsed+ mitral regurgitation	23 (29.4)
Mild mitral stenosis	11 (14.1)
Severe mitral stenosis+ Aortic regurgitation	8 (10.2)
Mild mitral stenosis + Aortic stenosis	8 (10.2)
Mild aortic stenosis(2 of them have valve replacement before pregnancy)	6 (7.30)
Moderate mitral stenosis + Aortic regurgitation	5 (6.40)
Severe mitral stenosis (one of them has replacement during present pregnancy)	5 (6.40)
Mitral valve prolapse	3 (3.80)
Moderate aortic stenosis	2 (2.50)
Moderate mitral stenosis	2 (2.50)
Mild pulmonary stenosis	2 (2.50)
Severe aortic stenosis + pulmonary hypertension	1 (2.50)
Severe aortic stenosis	1 (1.25)
Moderate mitral stenosis + mild aortic stenosis	1 (1.20)

According to predominance of valvular heart disease, there were 66 patients (84.5%) with predominate mitral, ten patients with aortic and two with pulmonary valve lesion as shown in table – 3.

Table 3: Distribution of patients according predominance and severity of valve heart lesion.

Predominance of valve lesion	PATIENTS (%)
Mild mitral valve lesion	45 (57)
Moderate mitral valve lesion	8 (10)
Severe mitral valve lesion	13 (17)
All mitral valve lesion	66 (84)
Mild aortic valve lesion	6 (7)
Moderate aortic valve lesion	2 (3)
Severe aortic valve lesion	2 (3)
Total aortic valve lesion	10 (13)
Pulmonary valve lesion	2 (3)
Total	78 (100)

VALVULAR HEART DISEASES AND PREGNANCY

Sixteen percent of our patients have developed congestive heart failure while twenty percent of patients have had arrhythmia after delivery. We need to increase the dose of their medication or start new regime to control their cardiac problems in thirty six percent of patients as shown in table – 4. Fourteen

percent of women with valve lesions delivery prematurely; eleven percent of their babies were low birth weight; twelve percent need admission to special neonate care unit, on other hand five percent of patients had intra-uterine fetal death. These figures have shown also in table – 4.

Table 4: Distributions of patients according their cardiac outcome after delivery and outcome of their babies.

Predominate lesion	Patients No.	Congestive heart failure. No.	Arrhythmia No.	Start or increase medication. No.	Preterm labour No.	Low birth weight No.	Intra uterine fetal death No.	Admission to neonate care unit No.
Mild mitral lesion	45	0	5	5	6	2	0	3
Moderate mitral lesion	8	3	3	6	1	1	0	1
Severe mitral lesion	13	9	4	13	2	4	2	4
Mild aortic valve lesion	6	0	2	2	0	0	0	0
Moderate aortic lesion	2	0	1	1	1	0	1	1
Severe aortic lesion	2	2	0	2	1	1	1	1
Pulmonary lesion	2	0	0	0	0	0	0	0
Total No. (%)	78 (100%)	14 (18%)	15 (20%)	29 (36%)	11 (14%)	8 (10%)	4 (5%)	10 (12%)

Spontaneous vaginal delivery has been occurred in fifty four women with valvular heart diseases while instrumental delivery has been conducted to shorten second stage of delivery in three women, on other hand, Caesarean section under general anesthesia,

was the method of delivery in twenty one women only two of them had their cardiologist recommended abdominal delivery as safer method to the mother, both of them have severe aortic stenosis, as shown in table – 5.

Table 5: Distribution of patients according their method of delivery

Method of delivery	Patients No (%)
Spontaneous vaginal delivery	54 (72)
Instrumental delivery to shorten the second stage of labour	3 (3)
Caesarean section for obstetrical reason	19 (24)
Caesarean section for cardiac reason	2 (1)

We compared the preterm delivery, intra uterine fetal death and low birth weight among women with valvular heart diseases and general maternity population in our department during the period of our

study. There was a significant difference between two groups regarding both preterm delivery and low birth weight as table – 6 showed.

Table 6: The fetal outcome among mothers with valvular heart diseases compared with general maternity population in Baghdad teaching hospital, September 2007 to October 2008.

	number	Preterm delivery (%)	p-value	Low birth weight (%)	p-value	Intra uterine fetal death (%)	p-value
Maternity population	8271	596 (7.2%)	0.03	316 (3.8%)	0.007	216 (2.6%)	0.09
Mothers with valvular heart lesion	78	11 (14.1%)		8 (10.2%)		4 (5.1%)	

DISCUSSION:

The presence of valvular heart diseases appears to increase the risk for both the mother and fetus during pregnancy and delivery. The incidence of valvular heart diseases among our patients at time of delivery is 0.94%, this figure in agreement with Lewis et al 11. Thirty percent of our patients did not receive standard combined antenatal care by consultant, mostly due to security status during period of study but this fortunately as appear in table -1. Combined valve heart lesions were commoner than single lesion with predominance of mitral valve lesion in 84% as shown in table – 2 and 3. The mild severity of all types of valve heart lesion was the commonest among pregnant women delivered in our department as found in table – 3, these findings in agreement with Hameed et al 12. The incidence of maternal and fetal outcome was directly related to severity of valvular heart disease as shown in table – 4 in agreement with Barbosa et al 8 and Silversides et al 13. The maternal and fetal outcome was higher compared with Hameed et al 12 most likely due to the fact that thirty percent of our patients with valvular heart disease not received standard antenatal care. Seventy two percent of women with valvular heart disease had spontaneous vaginal delivery and only twenty 25% had abdominal delivery as showed in table – 5. These results are in agreement with Hameed et al 12 and Silversides et al 13. We compared the fetal outcome of women with valvular heart disease with that of general obstetrical population in our department during same period 14 and we recorded a significant difference regarding preterm delivery and low birth weight but not for intra – uterine fetal death.

CONCLUSION:

Valvular heart diseases increase both maternal and fetal complications at time of delivery and immediate puerperium such rise related to severity of valvular heart lesion and the level of antenatal care during pregnancy.

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