ORIGINAL ARTICLE

Maternal Outcome among Women Having Cardiac Disease at Tertiary Care Hospital

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ABSTRACT

Aim: To determine the maternal outcome among women presented with cardiac disease at tertiary care hospital.**Study design:** Prospective study.**Place and duration of study:** Department of Obstetrics & Gynaecology, Liaquat University of Medical and Health Science Jamshoro from 1st April 2019 to 31st March 2020.**Methodology:** Fifty-seven women after 24 weeks of alive pregnancy and having cardiac diseases were included. The subjects were seen in the Gynaecology OPD every two weeks till 34-36 weeks, as per institutional protocols and after that every week by obstetrician. Cardiologists saw subjects in each trimester and delivery schedule were developed and medications were adapted with collaboration. The anaesthetic scheme of the subject was also reviewed with the cardiac anaesthetist. All the maternal outcome data was recorded.**Results:** Most of the patients 89.5% had age group of 25-32 years. Multiparous women were commonest 43.3% and 53.7% patients underwent normal vaginal delivery. 35.8% patients had congenital heart disease, 32.8% had cardiomyopathy and 16.4% had Rheumatic heart disease. According to the maternal outcome anemia was most common among 85.1%, pre-eclampsia 41.8%, pulmonary edema 35.8%, IUGR 20.9%, birth asphyxia 26.9%, preterm 38.8% and maternal mortality 14.9%. Abruptio placenta and preterm birth were significantly associated with congenital heart disease and cardiomyopathy $p=0.047$ and $p=0.002$ respectively. Pulmonary edema was higher among patients of cardiomyopathy ($p=0.027$). Birth asphyxia was higher among patients of rheumatic heart disease. While anemia, IUGR and maternal mortality were equally found among cardiac diseases, p -values were quit insignificant.**Conclusion:** Cardiac disease showed adverse maternal outcome during pregnancy with mortality rate of 14.9%.**Keywords:** Pregnancy cardiac disease, Maternal outcome, Mortality rate

INTRODUCTION

Cardiovascular disease is regarded among the major issues of maternal mortality and morbidity in the postnatal and antenatal periods^{1,2}. Taking care of cardiac mothers and children is extremely difficult, with problems such as late diagnosis and also insufficient facilities and drug supply¹. Cardiac disorder in pregnancy represents a spectrum of etiologies, inclusive of cardiomyopathies, valvular HD (VHD), pulmonary hypertension (PH), and adult congenital HD³. Cardiac disease may cause of anemia during pregnancy in 17(3.7%).² There are many clinical studies published on the data based on registries like ROPAC registry of pregnant cardiac patients^{4,5}.

Rheumatic heart condition is regarded as among the most prevalent forms in developing nations, while in developed nations, congenital heart disease (CHD) and cardiomyopathies are the primary types.⁶ Roughly 0.2 to 2% of all pregnant females are disturbed by cardiac abnormalities and maternal mortality of 20.5% is correlated with heart disease.^{1,6,7} Vietnam is identified as a low-middle-income nation, where agriculture is the primary source of economy. Vietnam's population has risen by 1.07 percent in a year, approaching a total of 93,700,000 individuals, as per statistics of Vietnam's General Department of Population in early 2018. The maternal mortality ratio in 2015 was 54 per 0.1 million live births, and

there were 18 thousand neonatal deaths.¹ In particular, acquired conditions are rheumatic with involvement of the mitral valve and coronary artery disease. Cardiac muscle disease, particularly cardiomyopathy peripartum, is a serious condition that occurs during postpartum period and pregnancy. It has a high mortality rate⁸.

To encourage ideal care throughout pregnancy that contributes significantly in the outcome, it is vital to carefully assess subjects for underlying cardiac disease.⁹ Management of heart disease during pregnancy is challenging. So heart disease with pregnancy should be managed as team approach involving an obstetrician and cardiologist and other specialists such as anesthesiologist¹⁰. Furthermore, no official publishing data is accessible for maternal outcomes among pregnant females of Vietnamese with heart disease¹. It is apparent that fetal development limitation affects 3%-7% of all neonates, which is correlated with several negative outcomes such as stillbirth.^{1,11} This study has been conducted to assess the maternal outcome among women presented with cardiac disease at tertiary care Hospital.

MATERIALS AND METHODS

This prospective study was conducted at Department of Obstetrics & Gynaecology, Liaquat University of Medical and Health Science Jamshoro from 1st April 2019 to 31st March 2020. All the women after 24 weeks of alive pregnancy and having cardiac diseases were included. Women with renal failure, diabetes mellitus, chronic liver

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disease, Uremia, eclampsia and pulmonary disease were excluded. Women underwent complete medical history, clinical examination and required laboratory investigations. As per institutional protocol, patients were seen in the Gynaecology OPD every two weeks up to 34-36 weeks and after which by obstetrician every week. Cardiologists saw subjects in each trimester and delivery schedule was developed and medications were adapted with collaboration. The anesthetic scheme of the subject was also shared with the anesthetist of the heart. Date of the C-section and mode of delivery were considered. Delivery was carried out in a specific labor ward of gynecology/obstetrics. Continuous monitoring of blood pressure, oxygen saturation and pulse was performed. Intermittent fetal cardiac rate was monitored by cardiotocograph (CTG) performed in perspective of the high-risk scenario. A 24-hour functional adult cardiac theatre in close vicinity on that same ground helped to quickly manage all complications. Full services for cardiac resuscitation were accessible in the ward together with a resident cardiologist. The data regarding maternal outcome was collected and recorded. Data was analyzed using SPSS version 20.

RESULTS

Most of the patients 89.5% had age group of 25-32 years, while remaining 10.5% patients were with age group of 33-40 years and 43.8% patients had hypertension. Multiparous women were commonest 50.9%, followed by 29.9% grand multipara and 19.2% were primipara. Most of the patients 45.7 underwent normal vaginal delivery, 36.8% underwent C-section, while 17.5% delivered by instrumental assessment. Majority of patients was un-booked 63.2% and 36.8% were booked (Table 1).

Table 1: Demographic characteristics of patients (n=57)

Variable	No.	%
Age (years)		
25-32	51	89.5
33-40	6	10.5
Hypertension		
Yes	25	43.8
No	32	56.2
Parity		
Multi	29	50.9
Primipara	11	19.2
Grand multi	17	29.9
Mode of delivery		
NVD	26	45.7
Instrumental	10	17.5
c- section	21	36.8
Booking status		
Booked	21	36.8
Un-booked	36	63.2

Table 4: Maternal outcome according to cardiac diseases (n=57)

Maternal outcome	Cardiac Disease			P value
	Congenital heart disease	Rheumatic heart disease	Cardiomyopathy	
Anemia	21	11	22	0.113
Abruption placenta	7	0	9	0.047
Pre-eclampsia	14	7	7	0.112
Pulmonary edema	4	4	12	0.027
IUGR	4	4	3	0.270
Preterm	11	0	9	0.024
Birth asphyxia	3	8	7	0.002
Maternal mortality	4	0	6	0.150

Table 2: Frequency of cardiac disease (n=57)

Cardiac disease	No.	%
Congenital heart disease		
Yes	24	42.1
No	33	57.9
Rheumatic heart disease		
Yes	11	19.3
No	46	80.7
Cardiomyopathy		
Yes	22	38.6
No	35	61.4

Table 3: Frequency of maternal outcome (n=57)

Maternal outcome	No.	%
Anemia		
Yes	47	82.4
No	10	17.6
Pre-eclampsia		
Yes	28	49.2
No	29	50.8
Pulmonary edema		
Yes	24	42.1
No	33	57.9
IUGR		
Yes	14	24.6
No	43	75.4
Birth asphyxia		
Yes	18	31.6
No	39	68.4
Preterm		
Yes	26	45.6
No	31	54.4
Maternal mortality		
Yes	10	17.5
No	47	82.5

According to cardiac diseases, 42.1% had congenital heart disease, 38.6% had cardiomyopathy and 19.3% had rheumatic heart disease (Table 2).

Maternal outcome anemia was most common among 82.4% patients, pre-eclampsia developed among 49.2% patients, pulmonary edema found among 42.1% patients, IUGR was recorded in 24.6% patients, birth asphyxia among 31.6%, preterm were 45.6% and maternal mortality was 17.5% (Table 3).

Abruption placenta and preterm birth were significantly associated with congenital heart disease and cardiomyopathy ($p=0.047$ and $p=0.002$) respectively. Pulmonary edema was higher among patients of cardiomyopathy ($p=0.027$). Birth asphyxia was higher among patients of rheumatic heart disease. While anemia, IUGR and maternal mortality were equally found among cardiac diseases, p -values were quite insignificant (Table 4).

DISCUSSION

Pregnant women with underlying heart disease (HD) are at increased risk for adverse maternal, obstetric, and neonatal outcomes.³ In this study most of the patients 89.5% had age group of 25-32 years, while remaining 10.5% patients were with age group of 33-40 years. Comparable findings found in the study of Nguyen Manh et al¹ majority of patients 86.97% was under 35 years and only 13.03% were more than 35 years according to age. Ansari et al⁸ stated that mean age of women was 28.3 years. Abbasi et al¹⁰ reported that 63.38% patients had age group of 21-25 years. Pujitha et al¹¹ reported that most of the women 50.0% were with age group of 21-25 years. In this study on patient's distribution according to cardiac diseases, 35.8% had congenital heart disease, 32.8% had cardiomyopathy and 16.4% had rheumatic heart disease. Owens et al³ reported that 17% patients had cardiomyopathy, 40% presented with VHD, 35% patients had ACHD, and PH found among 8%. Ansari et al⁸ reported that the according to cardiac diseases rheumatic heart disease was 70%, congenital heart disease was among 12.4%, arrhythmias in 9.6% patients, cardiomyopathy was in 6.8% patients and pulmonary hypertension was only among 1.4% patients. Abbasi et al¹⁰ reported that 76.05% women had rheumatic heart disease, 15.49% had CHD and 6 patients had arrhythmia. Pujitha et al¹¹ reported that mostly women had rheumatic heart disease 62.6%, 21.8% CHD and 15.6% peripartum cardiomyopathy. In this series according to the maternal morbidity, anemia was most common among 85.1% patients, pre-eclampsia developed among 41.8% patients, pulmonary edema found among 35.8% patients, IUGR was recorded in 20.9% patients, birth asphyxia among 26.9% and preterm were 38.8%. Pujitha et al¹¹ found anaemia 45.6%, preterm labor 27.3%, preeclampsia 18.1%, abruptio placentae 9%, pulmonary oedema 4.5% and pulmonary arterial hypertension 4.5%. Behera et al¹² observed that the commonest complications were anaemia 66.6% preterm labour 22.7%, preeclampsia 16.65%, abruptio placentae 25%.

In this study, maternal mortality was 14.9%. While in the study of Ansari et al⁸ found maternal mortality 2.7%. Pujitha et al¹¹ also found maternal mortality 3.12%. Campanharo et al¹³ found maternal mortality rate 4.8%. Maternal mortality was higher in our study, this may because small sample size and severity of disease.

In the current study, multiparous women were commonest 43.3%. Manh Manh et al¹ reported that gravida 3 were only 9.86% and more were 42%. Behera et al¹² also observed that 50% were primigravida, 36.3% were second gravida and 13.3% were gravid 3 or more.

Most of the patients 53.75 underwent normal vaginal delivery, 31.3% underwent C-section, while 14.9% delivered by instrumental assessment. Majority of patients was un-booked 68.7% and 31.3% were booked. Similarly, Behera et al¹² found that the labour was spontaneous in onset in all patients. In all patients with vaginal delivery outlet forceps and ventuse applied to cut short the second

stage of labour to reduce maternal distress. Pujitha et al¹¹ also found comparable findings as most of patients had vaginal delivery (81.25%) and caesarean section was done in 6 patients (18.75%).

CONCLUSION

The heart disease during pregnancy linked to significant maternal morbidity and mortality. Best cardiac management prior to pregnancy can be shoed better pregnancy outcome. A team approach for optimal management is necessary.

REFERENCES

1. Nguyen Manh T, Bui Van N, Le Thi H, Vo Hoang L, Nguyen Si Anh H, et al. Pregnancy with heart disease: maternal outcomes and risk factors for fetal growth restriction. *Int J Envir Res Public Health* 2019;16(12):2075.
2. Koutrolou-Sotiropoulou P, Parikh PB, Miller C, Lima FV, Butler J, Stergiopoulos K. Impact of heart disease on maternal and fetal outcomes in pregnant women. *Am J Cardiol* 2015; 116: 474–80.
3. Owens A, Yang J, Nie L, Lima F, Avila C, Stergiopoulos K. Neonatal and maternal outcomes in pregnant women with cardiac disease. *J Am Heart Assoc* 2018; 7(21): e009395.
4. Humayun S, Sultana R, Korejo R, Ashraf T, Jabeen S, Yasmin H. Maternal Mortality in Pakistan: An Attention Seeking Problem. *J Soc Obstet Gynaecol Pak* 2017; 7(1):22-7.
5. Ruys TPE. Heart failure in pregnant women with cardiac disease: data from ROPAC. *Heart* 2014; 100:231-8.
6. Mishra R. Ian Donald's practical obstetric problems; New Delhi: BI Publications; 2010.
7. Sawhney H, Aggarwal N, Suri V, Vasishta K, Sharma Y, Grover A. Maternal and perinatal outcome in rheumatic heart disease. *Int J Gynecol Obstet* 2003; 80, 9-14.
8. Ansari A, Khalil H, Javed R, Pervaiz F. Managing pregnant cardiac patients in a tertiary cardiac care unit improves fetomaternal outcome. *Pak Armed Forces Med J* 2015; 65(Suppl): S75-80
9. Fathy FT, Gonied AS, Mohammed NS. Maternal and neonatal outcome in women with cardiac diseases and suggested nursing guidelines. *JNHS* 2018;7;2;80-91.
10. Abbasi S, Siddiqua SF, Rijvi S, Akhtar S, Haque B, Jesmin S. Study of maternal and fetal outcome in pregnancy with heart disease. *Anwer Khan Modern Med Coll J* 2017; 23;8(2):112.
11. Pujitha KS, Sheela SR, Jyothi NS. A study of maternal and fetal outcome in cardiac disease in pregnancy at tertiary care center. *Int J Reprod Contracept Obstet Gynecol* 2017; 6:5095-8.
12. Behera R, Moharana JJ. Maternal and fetal outcome in cardiac disease in pregnancy: a retrospective study at tertiary care center. *Int J Reprod Contracept Obstet Gynecol* 2018; 7:4399-402
13. Campanharo FF, Cecatti JG, Haddad SM, Parpinelli MA, Born D, Costa ML, Mattar R, Brazilian Network for Surveillance of Severe Maternal Morbidity Study Group. The impact of cardiac diseases during pregnancy on severe maternal morbidity and mortality in Brazil. *PLoS One*. 2015 Dec 9;10(12):e0144385.