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RESEARCH ARTICLE

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Frequency of types of cardiac diseases in pregnant women with cardiac disease presenting to tertiary care hospital

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Abstract:

Cardiac disease of pregnancy encompasses a broad arena of pathologies. Many cardiac diseases during pregnancy are under investigation, and many others which are still not understood require further inquiry. Some of these diseases may be exacerbations of pre-existing conditions that the pregnant woman may already have, or they may develop a new disease process that presents because of the complex hormonal changes and physiology of pregnancy.

Objective:

To determine the frequency of types of cardiac diseases in pregnant women with cardiac disease presenting to tertiary care hospital.

Methodology:

This Cross Sectional Study was conducted in the department of Obstetrics and Gynaecology, LRH, Peshawarfrom 1st March 2021 to 31st August 2021.A total of 252 pregnant women with cardiac disease were included in the study. All women were sent to cardiology department and cardiac diseases were diagnosed. Women with cardiac diseases were managed as per slandered protocol.

Results:

Age range in this study was from 18 to 40 years with mean age of 29.650±2.55 years, mean parity 1.980±1.28 and mean gestational age was 28.841±2.23 Kg. Mitral regurgitation was observed in 30.2% patients, aortic aneurism 7.9%, angina pectoris 6%, mitral valve stenosis 21.8%, atrial septal defect 16.3% and ventricular septal defect was 18.7%.

Conclusion:

Mitral regurgitation was the most common heart disease among pregnant women with cardiac diseases.

Keywords:

Pregnancy, Cardiac diseases, Types

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1 | INTRODUCTION

Cardiac disease of pregnancy encompasses a broad arena of pathologies. Many cardiac diseases during pregnancy are under investigation, and many others which are still not understood require further inquiry. Some of these diseases may be exacerbations of pre-existing conditions that the pregnant woman may already have, or they may develop a new disease process that presents because of the complex hormonal changes and physiology of pregnancy. Pre-existing conditions which can predispose the pregnant woman to cardiovascular disease include hypertension, diabetes mellitus, and congenital heart disease.[1] Regardless, cardiac disease of pregnancy is a significant cause of or morbidity and mortality and has been cited to be present between 1-4% of all pregnancies.[2]

The frequency of cardiac disease in women has not been clearly established. It is also unknown if there is an increased frequency of individuals in developed vs. under-developed countries. Based on the best data, estimates are that at least 0.2% of pregnancies have complications with cardiac disease.[3] This frequency has been reported to be as high as 4%.4 If one includes hypertensive disease in this value, this number would be even higher, given that hypertensive disorders have been approximated to occur in up to 8% of pregnancies.[4]

The etiology of ischemic heart disease in pregnant women is similar to that of non-pregnant women. Risk factors which expose these individuals to ischemic heart disease include hypertension, hyperlipidemia and hypertriglyceridemia, diabetes mellitus, obesity, smoking, and immobility.[5]

In a study by Hossinzadeh R, et al. has showed that frequency of mitral regurgitation 21.6%, aortic aneurysm 8.1% and angina pectoris 6.3% in pregnant women with cardiac disease. [6]

In another study by Selvarani G, et al. has showed that frequency of mitral regurgitation was 29% in pregnant women with cardiac disease. [7]

In another study by Manh TN, et al. has showed that frequency of mitral valve stenosis was 22.89%, mitral valve regurgitation 40.14%, atrial septal defect (ASD) 16.55% and ventricular septal defect (VSD) 19.37% in pregnant women with cardiac disease. [8]

There is no prevalence data estimation of various cardiac diseases among pregnant population in our local population. During pregnancy, a team approach is needed with consultations with obstetrician so that the mode, time, and place of delivery can be planned.

Hence, it is important to examine pregnant mothers with cardiac disease in detail to encourage the development of optimal care during pregnancy that becomes an integral part of the overall outcome.

2 | MATERIAL AND METHODS

This Cross Sectional Study intheDepartment of Obstetrics and Gynaecology, LRH, Peshawar from 1st March 2021 to 31st August 2021.Sample size of 252 was calculated using WHO sample size software with 95% confidence interval and 3% margin of error using prevalence of angina pectoris by 6.3% 6Non-probability consecutive sampling was used for the study.

Woman aged 18-40 years, Singleton pregnancy on ultrasound, Gestational age 20-34 weeks on LMP, Any parity and patient with Cardiac Disease were included in study while patients with history of rhythm disorders, hypertensive heart diseases, NYHA Class IV and patients not willing to give consent were excluded from the study.

252 women fulfilling the inclusion criteria from Department of Obstetrics and Gynaecology, LRH, Peshawar were included in the study after permission from ethical committee. Basic demographics like age, gestational age, parity was noted and Informed consent was taken from each patient.All women were sent to cardiology department and cardiac diseases were diagnosed as per operational definition and recorded on especially designed proforma.Women with cardiac diseases were managed as per slandered protocol.

Data was analyzed with statistical analysis program (SPSS-version 22). Mean ±SD was presented for quantitative variables like age, parity and gestational age. Frequency and percentage was computed for qualitative variables like cardiac diseases. Cardiac diseases were stratified among age, parity, gestational age. Post stratification chi square test was applied $p \leq 0.05$ was considered statistically significant.

3 | RESULTS

Age range in this study was from 18 to 40 years with mean age of 29.650±2.55 years, mean parity 1.980 ±1.28 and mean gestational age was 28.841±2.23 Kg as shown in Table-1. Mitral regurgitation was observed in 30.2% patients, aortic aneurism 7.9%, angina pectoris 6%, mitral valve stenosis 21.8%, atrial septal defect 16.3% and ventricular septal defect was 18.7% as shown in Table-2-7. Stratification of cardiac diseases with respect to age, parity and gestational age was done but the results were statistically insignificant except for stratification of mitral regurgitation with parity (p=0.014).

Table-1: Mean±SD of patients according to age, parity and gestational age.(n=252)

Demographics	Mean±SD
Age (years)	29.650±2.55
Parity	1.980±1.28
Gestational age (weeks)	28.841±2.23

Table- 2: Frequency and %age of patients according to Mitral Regurgitation.(n=252)

Mitral Regurgitation	Frequency	%age
Yes	76	30.2%
No	176	69.8%
	252	100%

Table- 3: Frequency and %age of patients according to Aortic Aneurism.(n=252)

Aortic Aneurism	Frequency	%age
Yes	20	7.9%
No	232	92.1%
Total	252	100%

Table- 4: Frequency and %age of patients according to Angina Pectoris.(n=252)

Angina Pectoris	Frequency	%age
Yes	15	6%
No	237	94%
Total	252	100%

Table- 5: Frequency and %age of patients according to Mitral Valve Stenosis.(n=252)

Mitral Valve Stenosis	Frequency	%age
Yes	55	21.8%
No	197	78.2%
Total	252	100%

Table- 6: Frequency and %age of patients according to Atrial Septal Defect.(n=252)

Atrial Septal Defect	Frequency	%age
Yes	41	16.3%
No	211	83.7%
Total	252	100%

Table- 7: Frequency and %age of patients according to Ventricular Septal Defect.(n=252)

Ventricular Septal Defect	Frequency	%age
Yes	47	18.7%
No	205	81.3%
Total	252	100%

4 | DISCUSSION

The prevalence of heart disease is available in various literatures for the general population. CAD is commonly seen problem in general population. However, in special population such as pregnant females, the prevalence of heart disease is estimated to be between 0.2% and 4.0% in the western population.[9]

Pakistani data are not available on the prevalence of heart disease among pregnant women. The mean age of the women in the study was 29.650±2.55 years, which is acceptable with respect to the increased age of marriage, on the one hand and the high number of pregnancies, on the other hand. The most common cause of hospitalization in the women was dyspnea, cardiac palpitations, and high blood pressure, which the most common cause in the study by Dadgar and Porjavad was dyspnea during exercise[10]. Among the mothers with medical histories, 24.3% reported cardiac valvular problems, 18% a history of heart failure, and 11.7% a history of high blood pressure. In the study by Dadgar and Porjavad, the highest frequency of referral to obstetrics clinics by the pregnant women was 13.81% [10].

In this study, 96% of women were treated with angiography and medications and only 4% were under the care, due to risk symptoms. In the study by Shahgheibi and Naghshbandi, the prevalence of heart disease in pregnant women was 1.6% [11]. In this study, Mitral regurgitation was observed in 30.2% patients, aortic aneurism 7.9%, angina pectoris 6%, mitral valve stenosis 21.8%, atrial septal defect 16.3% and ventricular septal defect was 18.7%. In a study by Selvarani G, et al. has showed that frequency of mitral regurgitation was 29% in pregnant women with cardiac disease. [7]

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Shahgheibi and Naghshbandi reported that the most common type of heart disease in mothers was mitral stenosis (MS) (22%) [11].Dadgar and Porjavad highlighted that the rheumatic heart disease was the most common cause of heart disease (96.8%) [10].Balci et al reported that cardiovascular events in mothers occurred in 10.2% of the pregnancies [12].

In a study conducted in England in 2002, mitral valve prolapse (MVP) was identified as the most common heart disease, which its common symptom is heart palpitations during pregnancy, and the patients have been treated with Inderal [13]. Rheumatic valvular stenosis is still considered as the most common heart disease in the pregnant women in many countries, which is manifested as mitral stenosis in 75% of the cases [14]. Therefore, heart rheumatism has been identified as one of the most common causes of valvular heart disease. Wang et al found that the prevalence of heart rheumatism is equal to 8/1000 [15]. Rheumatic heart disease is the most common cause of the existing valvular diseases in females in our country. MVP is often well-tolerated with treatment [16]. Congenital heart disease is the most common cause of heart damages in the pregnant women. In the absence of heart disease, the structural basis of cardiac arrhythmias is rare during pregnancy, usually not requiring any medication [17,18]. Diagnosing and treatment of heart disease in a timely manner is highly critical during pregnancy. Valvularstenoses are not much well-tolerated than [heart] failures in the pregnancy.[19]

This study does not include acute cases, and the prevalence may be under estimated. In patients with heart disease, complicating pregnancy was not included. Both above can lead to under estimation. The prevalence in our study may imply urban population in the majority since our institution is a referral hospital. It may not be the distribution in general population. Patients were examined in non-randomized fashion.

5 | CONCLUSION

Mitral regurgitation was the most common heart disease among pregnant women with cardiac diseases. Prevalence data were significantly different from western data. Precise understanding and evaluation of mothers with heart disease are of particular importance. Due to functional and morphological variations of heart disease, it is difficult to predict its complications. Therefore, any complication in pregnant women during pregnancy should be taken into account seriously. Physicians are well aware that females with heart diseases will face high-risk pregnancies, but accurate determination of the quantity and quality of these risks is associated with difficulties for mothers and babies, and this indicates the requirement for a close control and monitoring of pregnancy in mothers with heart disease.

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