



Pattern of paediatric congenital heart diseases.

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Article received on:

01/03/2021

Accepted for publication:

4/06/2021

INTRODUCTION

Heart disease among children contributes significantly to morbidity and mortality. Congenital heart disease (CHD) is a common type of heart diseases seen in children and adult population.¹ CHD constitute major chunk of all types of major congenital malformation and estimated to affect between 2-3% of neonates whereas prevalence of CHD is estimated to be between 3 to 10 per 1000 live-births globally.^{2,3} Around 40000 children are estimated to born in Pakistan with CHDs.⁴ Data from developing world has shown that burden of CHDs is rising due to escalation in etiological and risk factors.¹ High risk of mortality is noted in CHD cases as most of CHD cases are representing late in cardiac healthcare setting while complications have already occurred adding further to overall mortality rates related to CHDs.^{5,6}

Developing countries have significantly improved early identification as well as appropriated

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ABSTRACT... Objective: To find out pattern along with age and gender wise distribution of congenital heart disease (CHD). **Study Design:** Cross Sectional study. **Setting:** Department of Pediatrics, Sughra Shafi Medical Complex, Narowal. **Period:** January 2019 to February 2020. **Material & Methods:** During the study period, a total of 151 children aged between 1 month to 15 years as confirmed case of CHD according to echocardiography were enrolled for this study. Gender, age categories, area of residence and types of CHDs were represented as frequency and percentages. Patients with different types of CHDs were distributed between both gender and different age categories. SPSS version 26.0 was used to handle and analyze all study related data. **Results:** During the study period, a total of 151 confirmed cases of CHD were enrolled. There were 82 (54.3%) male and 69 (45.7%) female representing a male to female ratio of 1.2:1. Most of the cases were aged less than 1 year. There were 118 (78.1%) children below 1 year of age while 22 (14.6%) between 1 to 5 years of age and 11 (7.3%) above 5 years of age. Ventricular septal defect (VSD) and ASD were noted to be the most frequent types of acyanotic heart lesions in 41 (27.2%) and 29 (19.2%) cases respectively whereas TOF was the most frequent type of cyanotic heart lesion in 23 (15.2%) cases. **Conclusion:** VSD followed by ASD and TOF were noted to be the most frequent types of CHD.

Key words: Congenital Heart Disease, Echocardiography, Ventricular Septal Defect.

Article Citation: Shah Nawaz K, Zahoor F, Madni B, Imran M, Naveed M, Fazal ur Rehman. Pattern of paediatric congenital heart diseases. Professional Med J 2021; 28(11):1678-1681. <https://doi.org/10.29309/TPMJ/2021.28.11.6450>

management for CHD, thus, have seen significant decline in mortality rates.^{7,8} Recent data from Pakistan has shown ventricular septal defect (VSD) and tetralogy of fallot (TOF) to be the most common types of CHDs noted in 27% and 10.9% CHD cases.⁹

The present study represents our experience about patterns of CHD types at a tertiary care hospital from Pakistan. Our findings will further add to what is known about the patterns of CHD and may help in formalizing proper strategies to decrease morbidity and mortality linked with it. The aim of this study was to find out pattern along with age and gender wise distribution of congenital heart disease (CHD) at a tertiary care hospital.

MATERIAL & METHODS

This cross-sectional study was conducted at The Department of Pediatrics, Sughra Shafi

Medical Complex, Narowal, from January 2019 to February 2020. During the study period, a total of 151 admitted children aged between 1 month to 15 years as confirmed case of CHD according to echocardiography were enrolled. Cases with acquired heart diseases were excluded. Approval from "Institutional Ethical Committee" was taken for this study. Informed consent was taken from parents or guardians of all study participants ensuring them the confidentiality of their data.

Gender, age categories, area of residence and types of CHDs were represented as frequency and percentages. Patients with different types of CHDs were distributed between both gender and different age categories. SPSS version 26.0 was used to handle and analyze all study related data.

RESULTS

During the study period, a total of 151 confirmed

cases of CHD were enrolled. There were 82 (54.3%) male and 69 (45.7%) female representing a male to female ratio of 1.2:1. Most of the cases were aged less than 1 year. There were 118 (78.1%) children below 1 year of age while 22 (14.6%) between 1 to 5 years of age and 11 (7.3%) above 5 years of age. There were 102 (67.5%) patients who belonged to rural areas of residence while remaining 49 (32.5%) were from urban areas.

VSD and ASD were the commonest types of acyanotic heart lesions in 41 (27.2%) and 29 (19.2%) cases respectively whereas TOF was the most frequency type of cyanotic heart lesion in 23 (15.2%) cases. Table-I is showing frequency of different CHD types with respect to gender distribution while Table-II is showing distribution of age with respect to different types of CHDs.

CHD Types	Number	Gender	
		Male (%)	Female (%)
Ventricular Septal Defect (VSD)	41	24 (58.5%)	17 (41.5%)
Atrial Septal Defect (ASD)	29	16 (55.2%)	13 (44.8%)
Tetralogy of Fallot (TOF)	23	11 (47.8%)	12 (52.2%)
Patent Ductus Arteriosus (PDA)	17	9 (52.9%)	8 (47.1%)
Transposition of the Great Arteries (TGA) with VSD with pulmonary stenosis (PS)	7	3 (42.9%)	4 (57.1%)
TGA with VSD with Pulmonary Hypertension (PH)	6	3 (50.0%)	3 (50.0%)
Complete Atrioventricular Septal Defect (AVSD)	6	3 (50.0%)	3 (50.0%)
Pulmonary atresia	3	1 (33.3%)	2 (66.7%)
Tricuspid atresia	3	2 (66.7%)	1 (33.3%)
Complex Heart Disease	5	3 (60.0%)	2 (40.0%)
Others	11	7 (63.6%)	4 (36.4%)
Total	151	82 (54.3%)	69 (45.7%)

Table-I. Distribution of Gender with regards to CHDs. (n=151)

CHD Types	Number	Age (years)		
		<1 (%)	1-5 (%)	>5 (%)
Ventricular Septal Defect (VSD)	41	36 (87.8%)	3 (7.3%)	2 (4.9%)
Atrial Septal Defect (ASD)	29	26 (89.7%)	2 (6.9%)	1 (3.4%)
Tetralogy of Fallot (TOF)	23	18 (78.3%)	4 (17.4%)	1 (4.3%)
Patent Ductus Arteriosus (PDA)	17	11 (64.7%)	4 (23.5%)	2 (11.8%)
Transposition of the Great Arteries (TGA) with VSD with pulmonary stenosis (PS)	7	6 (85.7%)	1 (14.3%)	0
TGA with VSD with Pulmonary Hypertension (PH)	6	5 (83.3%)	1 (16.7%)	0
Complete Atrioventricular Septal Defect (AVSD)	6	4 (66.7%)	1 (16.7%)	1 (16.7%)
Pulmonary atresia	3	1 (33.3%)	1 (33.3%)	1 (33.3%)
Tricuspid atresia	3	2 (66.7%)	1 (33.3%)	0
Complex Heart Disease	5	3 (60.0%)	1 (20.0%)	1 (20.0%)
Others	11	6 (54.5%)	3 (27.3%)	2 (18.2%)
Total	151	118	22	11

Table-II. Distribution of age with regards to CHDs. (n=151)

DISCUSSION

In the last few decades, compared to developing countries, developed world has made significant advancements in medical sciences that have helped timely identification and management of patients living with cardiac diseases.¹ On the other hand, in a country like Pakistan, it is still very challenging to timely identify and manage CHDs in children. Lots need to be done in Pakistan to estimate and frame management strategies for children living with CHDs.

The CHDs can be simple defects presenting without any symptoms while complex defects can represent with serious life threatening conditions.¹⁰ In the present study, 78.1% children with confirmed CHDs were below 1 year of age. Age of diagnosis of CHDs among children is variable in different parts of the world as multiple factors contribute to this variation.¹¹ Data from India found 69.7% of their CHD cases to be within 1 year of age.¹² Shah et al showed 55.5% of their study cases to be below 1 year of age.¹³ Local study done by Khan et al recorded 71% of CHD cases to be below 1 year of age.¹⁴ As CHD is known to be the most frequent types of major congenital malformations, high rates of mortality are associated with CHDs in 1st year of life.⁹ Quite a few CHD cases are not detected timely as many of these present asymptotically.¹⁰

We noted 54.3% of the children to be male. Mohammad N et al¹⁵ in a local study found 55.3% of their cases with CHDs to be male which is quite close to which we found. Regional data from India also elaborates males to form majority of CHD cases (66%).¹²

In this study, VSD and ASD were noted to be the most frequent types of acyanotic heart lesions in 41 (27.2%) and 29 (19.2%) cases respectively whereas TOF was the most frequency type of cyanotic heart lesion in 23 (15.2%) cases. Study from Karachi¹⁶ also found VSD to be the most common type of acyanotic heart lesion while TOF was the most frequent cyanotic heart lesion. Another local study also showed VSD, TOF and ASD to be the most frequent types of CHDs noted.¹⁷ Aman W et al also observed similar

findings.¹⁸ Sehar T et al found VSD as the most frequent congenital heart lesion seen in 18% of their cases while PDA was the 2nd most frequent heart lesion.⁹ Data from India recorded VSD to be the commonest type of CHD seen in 21.3% of their cases whereas ASD was the 2nd most common heart lesion seen in 18.9% cases.¹⁹ Worldwide, VSD is known to be the commonest type of acyanotic heart lesion seen in 25-30% of CHD patients.²⁰ Differences in patterns of CHD types could be credited to differences in diagnostic modalities as well as variation in healthcare standards whereas genetic and various environmental factors are also responsible for these variations.^{1,11}

Our study had some limitations as well. No management or follow up data was recorded in the present set of patients. Further studies are required to record follow up and pre-school/school data which is thought to highlight some important clinical and social aspects of CHDs in our population.

CONCLUSION

VSD followed by ASD and TOF were noted to be the most frequent types of CHD. As most CHD cases are reporting with age less than 1 year, there is a need to establish more cardiac surgery centers in Pakistan.

ACKNOWLEDGEMENT

The authors are thankful to Mr. Muhammad Aamir (Research Consultant, Bahawalpur) for his volunteer assistance in statistical analysis of this research.






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No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
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2	Farhan Zahoor	Introduction, Proof reading.	
3	Bushra Madni	Literature review, Methodology.	
4	Muhammad Imran	Data analysis, Discussion.	
5	Muhammad Naveed	Literature review, Data collection.	
6	Fazal ur Rehman	Drafting, References.	