

Original Article

PATTERN OF CONGENITAL HEART DISEASES IN CHILDREN AT TERTIARY CARE CENTER IN PESHAWAR

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ABSTRACT:

Objectives: To assess the age, sex distribution and relative frequency of congenital heart disease in children at tertiary care center in Peshawar, NWFP.

Settings: Study was conducted in the department of Paediatric and Neonatology, Khyber Teaching Hospital, Peshawar.

Design: A study conducted over a period of two years from July 1997 to June 1999.

Methods: One hundred and fifty children up to fifteen years of age with clinical suspicion of congenital heart disease were subjected to chest X-Ray and Electrocardiography while the final diagnosis was confirmed by Echocardiography.

Results: Out of 150 cases, 100 were males (66.66%) and 50 females (33.33%). Sixty eight percent of children with congenital heart disease presented at age less than 5 years and only 2% at age above 10 years. Two-third of the total children had acyanotic cardiac lesions. Ventricular septal defect followed by aortic stenosis, mild pulmonary stenosis, patent ductus arteriosus and atrioventricular septal defect were the commonest acyanotic congenital heart lesions. Tetralogy of Fallot followed by transposition of great arteries and tricuspid atresias were the commonest cyanotic congenital heart lesions.

Conclusion: Majority of patient with congenital heart disease detected in a tertiary care center have non-cyanotic CHD. TOF is the commonest cyanotic lesion and VSD non-cyanotic lesion. In order to avoid complications, early detection of congenital heart disease is of utmost importance for proper management. This can be achieved by examining newborns in maternity units, postnatal clinics, special care baby units, immunization centers, primary health care units and at school entry. 2D echo with Doppler examination forms the gold standard for diagnosis.

KEYWORDS: Congenital heart disease, acyanotic congenital heart lesions, cyanotic congenital heart lesions, Ventricular septal defect, Tetralogy of Fallot, Electrocardiography and Echocardiography.

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INTRODUCTION

Congenital heart disease by definition is the structural or functional heart disease, present at the time of birth, even if it is detected later on¹. In our country majority of childbirths still takes place at home and routine neonatal screening is not common, so it's very difficult to calculate true birth prevalence of congenital heart disease.²

Pattern of congenital heart disease is well documented in western countries³⁻⁶. Congenital heart diseases may present in any age group from neonatal age to adolescent age group.

Presentation varies, in some patients it may present with or without cyanosis, some with congestive cardiac failure, cyanotic spells, while some children may be asymptomatic but with a cardiac murmur detected during examination for any other illness. Congenital heart disease is 5th in number of the leading causes of deaths in infancy and childhood in Canadian children with two thirds of these deaths occurring in the first year of life. Congenital heart disease if left untreated is an important cause of morbidity and mortality in children, therefore early diagnosis and proper intervention is most important. This study was initiated to determine the relative frequency of individual congenital heart lesions in cyanotic as well as acyanotic patients to determine the age and sex differentiations in these cases.

PATIENTS AND METHODS

This study was conducted in Paediatric Department of Khyber Teaching Hospital Peshawar, NWFP. All the children with clinical suspicion of Congenital Heart Disease were evaluated with detailed history and clinical examination. They were initially investigated by performing Chest X-Ray and electrocardiography and final diagnosis was confirmed by echocardiography.

Inclusion criteria:

Children up to 15 years of age with suspicion of congenital heart disease.

Exclusion Criteria:

1. Age more than 15 years.
2. Children with acquired heart disease.
3. Those unstable patients who died before the confirmation of diagnosis.

RESULTS

Total 150 children were included in this study. Data from these patients were evalu-

ated regarding age, sex distribution and the frequency of different congenital heart defects. Age group ranged from newborn to 15 years. Sixty eight percent of children with congenital heart disease presented at age less than 5 years, 29% in age group of 6 to 10 years while only 2% at age above 10 years. Out of 150 cases, 100 were males (66.66%) and 50 females (33.33%). Male to female ratio was 2:1. (Table I). Two-thirds (66.66%) of children were having acyanotic congenital heart lesions.

Table-I: Age distribution in 150 cases of CHD

<i>Age group</i>	<i>No. of Cases</i>	<i>Percentage</i>
0-29 days	12	8
1 Month – 1 Year	21	14
Over 1 – 5 years	70	46.66
6 – 10 years	44	29.33
11-15 years	3	2

Among the acyanotic group ventricular septal defect (VSD) was the commonest lesion found in 46% of cases, followed by mild pulmonary stenosis, aortic stenosis 13.2% (6.6% each) while atrioventricular septal defect and patent ductus arteriosus (PDA) were detected in 5.2% (2.6% each). Tetralogy of Fallot (TOF) 25.3%, transposition of great arteries in 8% and tricuspid atresia was detected in 0.6% of cases in children with cyanotic congenital heart lesions. Complex congenital heart disease with dextrocardia was found in 1.3% of cases. (Table-II).

DISCUSSION

Congenital heart disease is an important cause of morbidity and mortality in children. It causes death of thousands of children in developing countries.⁸ This study does not give a true incidence or prevalence of congenital heart disease in total population because this study was confined to hospital only. In this study two-third (66.66%) of Congenital heart disease were acyanotic and one-third (33.33%)

Table-II: Relative distribution of cyanotic and non-cyanotic CHD lesions and its comparison with the study by Rehan et al. 2002 ⁷

Cardiac Lesion	Present study No. of Patients (%)	Study by Rehan et al. No. of Patients (%)
Ventricular Septal Defect	69 (46)	180 (47.24)
Tetralogy of Fallot	38 (25.3)	38 (9.97)
Transposition of great arteries	12 (8)	21 (5.51)
Pulmonic stenosis	10 (6.6)	28 (7.35)
Aortic stenosis	10 (6.6)	13(3.41)
Patent ductus arteriosus	4 (2.6)	39 (10.24)
Atrial septal defect	4 (2.6)	56 (14.70)
Complex congenital heart disease with dextrocardia	2 (1.3)	5 (1.31)
Tricuspid atresia	1 (0.6)	1 (0.27)
TOTAL	150	381

were cyanotic, well correlating with international data³⁻⁶ as well as earlier studies from Pakistan.⁹⁻¹⁰

Maximum number of children with congenital heart disease was observed up to 5 years of age followed by 6-10 years of age and children with congenital heart disease were placed in age group 11-15 years. Same was observed in the study done by Al-EHAG, 1994.¹¹ Number of males was 100 and females were 50 with a ratio of 2:1. In this study the female dominance of patent ductus arteriosus and male dominance of pulmonary stenosis, aortic stenosis and atrioventricular septal defects was observed. This is comparable with the study in Sudanese children where a female dominance was noted with atrioventricular septal defect.¹¹ A similar female dominance of patent ductus arteriosus and a male dominance of pulmonary stenosis and aortic stenosis was observed in another study also.¹² There was a male dominance in case of pulmonary stenosis and a single ventricle while a female dominance was noted in patent ductus arteriosus.¹³ The overall male dominance is similar to other studies in Pakistan. In the largest study by Rehan et al.⁷ also from Peshawar males were 65% and female 35%. In the study from Pediatric deptt. of JPMC Karachi by Rahimtoola,

males were 57% and female 43%.¹⁰

Out of acyanotic children 46% had ventricular septal defect, majority with perimembranous type. Sixty children have isolated ventricular septal defect while 9 children had other cardiac lesions along with ventricular septal defect. Ventricular septal defect was the commonest congenital heart disease in a study performed by Mumtaz M. Hassan 1989¹⁴ and also in a study performed by Grech-V.¹⁵ This study was also comparable with that performed at National Institute of Cardiovascular diseases, Karachi.¹⁶ In the study of two hundred patients by Shafqat et al.⁹ VSD was found in 42 (21%), ASD in 32 (16%) and PDA 24(12%). This difference is because of the age of the patient in these studies.⁹⁻¹⁰

Among the cyanotic lesions Tetralogy of Fallot was the commonest congenital heart lesion followed by transposition of the great arteries. This is comparable with the study in Taiwan where the commonest cyanotic cardiac lesion was Tetralogy of Fallot and then transposition of the great arteries¹¹. In another study Tetralogy of Fallot was most common but transposition of the great arteries was earlier to present¹⁴. Transposition of the great arteries was found in 4.2% in another study

while Tetralogy of Fallot and critical pulmonic stenosis were more frequent in Chinese children.¹⁷

Pulmonary stenosis was found in 6.6% of the cases, which was comparable with the study done in Sudan.¹¹ Atrioventricular septal defect was found in 2.6% in this study, 5% in Sudan, 3.5% in Canada and 4.8% in Taiwan, while it was one of the most frequent Congenital Heart Disease i.e. 7.5% of all the developmental anomalies of circulatory system in Poland with no explanatory reason.¹⁸ Patent ductus arteriosus was detected in 2.6% in our study, comparable with study conducted in Taiwan.¹⁹ Dextrocardia was found in 1.3% in our study, in 0.9% children at NICVD, Karachi and 2.9% in the book of Maud Abbots, 1000 autopsied cases of congenital heart disease.¹⁷

CONCLUSIONS

Our study performed over a period of two years shows that non-cyanotic congenital heart disease is the most common congenital heart disease in the tertiary care units followed by cyanotic heart disease. 2D echo and Doppler examinations of all neonates, infants and children suspected of congenital heart disease is essential for correct diagnosis and proper management.

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