Original Article

Congenital Heart Diseases

Frequency of Congenital Heart Diseases in Neonatology Section of a Tertiary Care Hospital Peshawar

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ABSTRACT

Objectives: To determine the frequency of common congenital heart diseases (CHD) in children presenting to Pediatrics Department of Lady Reading Hospital, Peshawar.

Study Design: Cross sectional descriptive study

Place and Duration of Study: This study was conducted in the Pediatrics & Neonatology Department of Lady Reading hospital Peshawar, from 14th July 2010 to 14th July 2011.

Materials and Methods: A total of 481 patients, using 3.1% propotion of ASD in cases with CHD, 95% Confidence interval, 1.55% margin of error, under WHO software formula for simple size determination. Children from 0-18 years of age clinically diagnosed cases with their echocardio-graphy which was also suggestive of CHD were included in this study. Postoperative cases of CHD as they require different kind of management plan and Confirmed cases of CHD were excluded.

Results: Patients with acyanotic CHD were 416 (86.48%) and with cyanotic CHD were 65 (13.52%). Cases of ventricular septal defect(VSD) were 190(39.5%) and amongst them 120 (63.16%) were males and 70 (36.8%) were females. Cases of atrial septal defect (ASD) were 146 (30.35%) and amongst them 63(43.15%) were males and 83(56.84%) were female. Thus, there was a female preponderance of ASD patients as compared to VSD. As for patent ductus arteriosus (PDA) there were 80 (16.63%) cases and of transposition of great arteries (TGA) were 30(6.23%). Whereas cases of tetrology of fallot (TOF) were 35(7.27%) .

Conclusion: Congenital heart defects (CHD) are among the most common birth defects and are the leading cause of birth defect-related deaths. VSD is the commonest acyanotic CHD whereas TOF is the commonest cyanotic heart disease.

Key Word: Congenital Heart Diseases, Echocardiography, VSD

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INTRODUCTION

Congenital heart disease is a structural abnormality of the heart or intra thoracic vessels that is present since birth and is potentially of functional significance[1]. Congenital heart disease (CHD) is the leading cause of birth defects, and accounts for more deaths in the first year of life than any other condition when infectious etiologies are excluded. In Early studies of the incidence of CHD, as summarized by Hoffman [2] produced low incidences of about 4 to 5 per 1,000 live births. But this figure has been rising steadily until recently when incidences of 5 to 8/1,000 live births or higher have been reported in the literature.[3]

In Pakistan each year 12000 children are born with congenital heart disease. Almost 90% of these either die or are diagnosed so late that even surgery is ineffectual.[4]

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Another retrospective study was conducted by Aman W, in order to find out the frequency of various congenital heart diseases (CHD) in patients less than 12 years of age. Conclusion was that majority of the congenital cardiac anomalies in patients less than 12 years of age are acyanotic. VSD and ASD are the major acyanotic and TOF is the major cyanotic congenital heart disease.[5] In a recent local study at the National Institute of Cardiovascular disease (NICVD), Karachi, showed that congenital heart disease was reported with the frequency of 2(0.5%) and 4(0.8%) in two data sets.[6]

European countries covering 3.3 million births during the period 2000 to 2005 showed that the average total prevalence of CHD was 8.0 per 1000 births, and live birth prevalence was 7.2 per 1000 births, varying between countries. The total prevalence of nonchromosomal CHD was 7.0 per 1000 births, of which 3.6% were perinatal deaths, 20% prenatally diagnosed severe nonchromosomal CHD (i.e., excluding ventricular septal defects, atrial septal defects, and pulmonary valve stenosis) occurred in 2.0

per 1000 births, of which 8.1% were perinatal death.[7] In one English health region, reported prevalence of cardiovascular malformations was 6.5 per 1000 live births.[8,9] In a population-based study of all Danish live births from 1977 to 2005, the prevalence of CHD was 10.3 per 1000 live births.[10] The highest prevalence for CHD was observed in a population-based study from Taiwan with a prevalence of 13.1 per 1000 live births between 2000 and 2006.[11]

Keeping in view the mortality and morbidity from congenital heart defects in pediatric patients the aim of my study is to determine the frequency of common congenital heart diseases in a tertiary care hospital.

MATERIALS AND METHODS

This cross sectional descriptive study was conducted in the department of Pediatrics & Neonatology, Lady Reading hospital, Peshawar from 14th July 2010 to 14th July 2011.

A total of 481 patients, using 3.1% propotion of ASD in cases with CHD, 95% Confidence interval, 1.55% margin of error, under WHO software formula for sample size determination.

Inclusion criteria were all Children from 0-18 years ,clinically diagnosed cases with their echocar-digraphy was also suggestive of CHD. Exclusion Criteria were all Postoperative cases of CHD as they require different kind management plan and Confirmed cases of CHD.

After approval from the hospital ethical committee, data was collected from all clinically diagnosed patients suspected for having CHD.

Patients fulfilling the inclusion criteria were enrolled in the study and an informed consent was taken from parents & relatives of the patients for further evaluation. All the children were sent to the Cardiology Department of the institute for echocardiography which was done by echocari-graphist (Cardiologist) to confirm the CHD.

After the echo report frequency of common CHD i.e. ventricular septal defect(VSD), Atrial septal defects (ASD), Patent ductus arteriosus (PDA): Tetrology of Fallot (TOF), Transposition of great arteries (TGA), amongst these children was determined. Echocardiography was performed by the same Cardiologist for all patients.

All the data was entered and analyzed by SPSS version 16. Percentages and frequencies were determined for the common CHD i.e. ventricular septal defect(VSD), Atrial septal defects (ASD), Patent ductus arteriosus (PDA) , Tetrology of Fallot (TOF), and Transposition of great arteries (TGA). Mean and standard deviation were calculated for quantitative variables like age.

RESULTS

Frequency of both cyanotic and acyanotic CHD, and male to female ratio as well as age distribution of specific diseases is analyzed as below:

Patients with acyanotic CHD were n=416 (86.48%) (Table 1). Patients with cyanotic CHD were n=65 (13.35%) (Table 2).

Table No.1: Frequency of Acynotic CHD (N=481)

CHD	No. of cases(percentages)
Acynotic CHD	**416(86.48%)**
i.VSD	190(39.5%)
ii.ASD	146(30.35%)
iii.PDA	80(16.63%)
Total	**481(100%)**

Table No.2: Frequency of Cynotic CHD (N=481)

CHD	No. of cases(percentages)
Cyanotic CHD	65(13.5%)
i.TGA	30(6.23%)
ii.TOF	35(7.27%)
Total	**481(100%)**

Table No.3: Age distribution of CHD (N=481)

CHD	Mean Age (yrs) ± Std. Deviation	
	Males	Females
VSD (n=190)	3.8yrs± 4.37	4.8yrs±4.637
ASD (n=146)	5.61yrs±4.65	4.48yrs±3.97
PDA (n=80)	2.07yrs±3.15	3.2051±3.438
TOF(n=35)	1.44yrs±1.47	2.313±1.68
TGA (n=30)	3.91yrs±3.88	3.58yrs±4.32

Table No.4: Sex wise distribution of Acyanotic CHD (N=481)

Acyanotic CHD	Males		Females	
	No. of cases	%age	No. of cases	%age
i.VSD n=190	120	63.16%	70	36.84%
ii. ASD n=146	63	43.15%	83	56.8%
ii.PDA n=80	41	51.25%	39	48.75%

Table No.5: Sex wise distribution of Cyanotic CHD (N=481)

Cyanotic CHD	Males		Females	
	No. of cases	%age	No. of cases	%age
i.TOF (n=35)	19	54.28%	16	45.71%
ii.TGA (n=30)	18	60%	12	40%

Mean age of patients with ASD in males was 5.61±4.65yrs and in females it was 4.48±3.97 yrs. Mean age of male patients with PDA was 2.07±3.15 yrs and in females it was 3.025±3.438

yrs. As for age distribution in cases with VSD, mean age was 3.8±4.37 yrs amongst males and 4.8±4.637 yrs amongst females. Mean age of male patients with TOF was 1.44±1.47 yrs and in females it was 2.312 ±1.68 yrs (Table 3).

Cases of VSD were n=190(39.5%) and amongst them n=120(63.16%) were males and n=70(36.8%) were females. Cases of ASD were n=146 (30.35%) and amongst them n=63 (43.15%) were males and n=83(56.84%) were female. Thus, there was a female preponderance in patients with ASD as compared to VSD. As for PDA there were n=80(16.63%) cases and amongst them n=41(51.25%) were males and n=39(48.75%) were females. Cases of TGA were n=30(6.23%) and amongst them n=18(60%) were males and n=12(40%) were females. Whereas cases of TOF were n=35(7.27%) and amongst them n=19(54.28%) were males and n=16(45.7%) were females (Table 4).

DISCUSSION

Incidence of CHD is underestimated in developing countries due to home deliveries and early discharge of mothers along with their neonates from hospitals without proper neonatal examination pertinent to cardiovascular system by a qualified and experienced personal due to financial constrains and cultural religious issues. If the problems are recognized at an earlier age, the chances of long term complications are less and the outcome is better. In my study Acynotic congenital heart constitutes the major bulk with nearly 86% of patients falling in this category. This can be compared to a study conducted by Aman W[5] in which also acyanotic CHD was present in 80% of patients.

Among the acyanotic variety VSD is the most common variant with nearly 39.5% of patient having this congenital heart disease. This can be compared to a study by Masood M[12] in which frequency of VSD was 38.3%. VSD is commoner in males (63.16%) as compared to female (36.84%). This can be compared to a study conducted by khan I[13] in which 75% patients were male and 25% were female.

ASD is the second most common variant of acyanotic variety in my study with nearly 30.35% of patient having this congenital heart disease. This can be compared to a study by Sadiq M[14] in which frequency of ASD was 13.2% making it the second most common variant after VSD.

It was found in my study that ASD is commoner in females (56.84%) as compared to males (43.15%). This can be compared to a study conducted by Sharmin SL[15] in which also ASD was found to be commonest in females. It was found in my study that the frequency of TOF in male patients was 54.28% and in female it was 45.71%. This can be compared to a study conducted by Aman W[5] in which TOF was found in 65.1% of male patients and 34.9% amongst females.

Transposition of great vessels is another variety of cyanotic CHD. In my study 6.23% of patients had this variety of CHD. This can be compared to a study by Sharmin SL[15] in which frequency of TGA was 0.9%, and is relatively uncommon as compared to other CHD.

It was found in my study that the frequency of TOF in male patients was 60% and in female it was 40%. This can be compared to a study conducted by Sharmin SL[15], however in their study TGA was found commonly in of female patients as compared to males.

CONCLUSION

It was concluded from my study that congenital heart diseases poses a major challenge to clinicians regarding early diagnosis and proper referrals of paediatric population suffering from CHD particularly neonates. VSD constitutes major form of acyanotic variety and TOF is the main cyanotic variety of CHD in my study.

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