SRYAHWA PUBLICATIONS

Archives of Pediatrics and Neonatology
ISSN: 2638-5155 | Volume 6, Issue 1, 2023
https://doi.org/10.22259/2638-5155.0601002

SHORT COMMUNICATION

Frequency of Congenital Heart Defects in Infants and Young Children Based on Echocardiography at a Children's Hospital in Lahore

Aqsa Razzaq[1], Dr. Syed Najam Hyder[2], Saba Aziz[3]

[1] Pediatric cardiology, University of Child Health Science, Lahore.
[2]Department of Cardiology, the Children Hospital and Institute of Child Health, Lahore.

Received: 11 April 2023 Accepted: 04 May 2023 Published: 24 May 2023

Corresponding Author: Dr.Syed Najam Hyder, Pediatric cardiology, University of Child Health Science, Lahore, Pakistan.

Abstract

Aim: The aim of this study is to find out the prevalence of congenital heart defect in infants and young children in limited resources country.

Method: A descriptive-observational study was carried out at cardiology department over the period of four months from September to December 2016. Data was collected on a predesigned proforma containing information regarding name, gender, age, weight and associated malformations.

Results: Out of 1266 referred patients for echocardiography, congenital heart defects were detected in 93% .There were 64.7% (n=820) males and 35.3% (n=446) females. 83% of the children had acyanotic heart defects and 17% children had cyanotic heart defects. Most frequent acyanotic and cyanotic heart defects were Ventricular septal defect (VSD) 32.8% and Tetralogy of Fallot (TOF) 5.9% respectively.

Conclusion: The prevalence regarding congenital heart defectdetected more acyanotic than cyanotic heart diseases. Ventricular septal defect found to be the commonest in acyanotic lesion and Tetralogy of Fallot the commonest cyanotic heart defect.

Keywords: Congenital heart disease, 2-dimension echocardiography, ventricular septal defect, tetralogy of Fallot.

1. Introduction

25% of inborn anomalies compromises congenital heart defects with high death rate[1].More than 2/3 rd children with cardiac defect usually presented with critical symptom within one year of life and very few survive to childhood or adolescence if untreated. Advancement in surgical and intervention techniques improved the survival rate[2]. Clinical symptoms vary in CHD. Asymptomatic cases picked up routinely during checkups. Symptomatic children usually presented mostly with cardiac failure, failure to thrive or cyanosis. Mostly etiologynot known, but high incidence noted in chromosomal anomaly, maternal diabetes, smoking, teratogenic drug and TORCH infection [3]. High infant mortality is also considered due to congenital heart defect. Timely detection of cardiac defect and its correction improves the survival rates in CHD[4].Screening of congenital defects required high resources. Therefore, this study was conducted to find out the prevalence of Congenital heart defects in country like our inspite of poor health structure and limited resources for screening congenital defects as well as poor referral system.

Citation: Dr. Syed Najam Hyder, Frequency of Congenital Heart Defects in Infants and Young Children Based on Echocardiography at a Children's Hospital in Lahore. Archives of Pediatrics and Neonatology. 2023;6(1): 09-12.

2. Materials and Method

This is a descriptive-observational study based on echocardiographic findings conducted in echocardiography department at Children Hospital, The Institute of Child Health Lahore from September to December 2016. A total 1266 infants and young children (aged from birth to 2 years)with the suspicion of heart disease were referred for echocardiography. Confidentiality of information was ensured. Verbal consent followed by written consent was obtained from patient's parents.

2.1. Inclusion Criteria

All children included who referred for echocardiography with suspicion of congenital cardiac defect.

2.2. Exclusion Criteria

1- PFO, Pulmonary hypertension and PDA below 28 days of life were excluded.

2- Multiple heart defects were categorized in major defect with associated lesion.

2.3. Echocardiography

Transthoracic echocardiography were recorded by using 4S, 5S probe of GE vivid 7 model of echocardiography machine. 2-D, M mode and Doppler (pulsed, continuous-wave, and color flow mapping) studies were carried out to record cardiac defect, dimension, function and regurgitations respectively by consultant pediatric cardiologist in sedated children. Proper sequential analysis done as per protocol in different views.

Echocardiographic data was collected on a predesigned proforma containing information regarding name, gender, age, weight and associated malformation.

2.4. Statistical Analysis

All data entered in SSPS version -22 .Categorical variables applied to compile the results and find the frequencies and percentages.

3. Results

Out of 1266 referred children for echocardiography 72.5% were diagnosed as having congenital heart defects.There were 64.7% males (n=820) and 35.3% females (n=446).The neonate was 29.9%, less than 1 year were 50.2% and greater than 1 year were found to be 19.9%.

The relative frequencies of acyanotic versus cyanotic congenital heart defects were found to be 83% to 17%. (Figure-1). In acyanotic cardiac lesion ventricular septal defect were found to be 32.8% followed by atrial septal defect 10.7% and Patent ductus arteriosus 22.3%. Other included 5.9% complete AVSD and 1% valvular PS.

Whereas in case of cyanotic heart lesion Tetralogy of Fallot was found to be 5.9% followed by Transposition of great vessels 5.4% and Tricuspid atresia 1.8% (Figure-2). The relative distribution of congenital

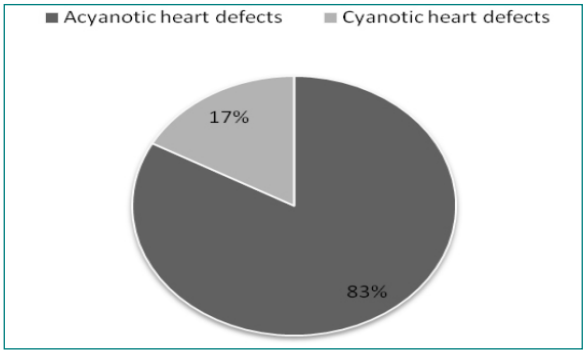

Figure 1. *Percentage of two groups of patients*

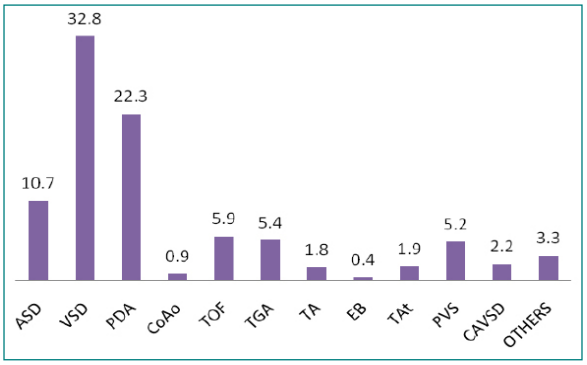

Figure 2. *Frequency of congenital heart defects in infants and young children*

Table 1. *Relative distribution of cyanotic and a-cyanotic CHD*

Disease	Frequency(n)	%
Atrial Septal Defect	136	10.7
Ventricular Septal Defect	415	32.8
Patent DuctusArteriosus(Above I month of age)	282	22.3
Pulmonary valve stenosis	11	0.9
Complete Atrioventricular defect (AVSD)	75	5.9
Transposition of great Arteries	68	5.4
Tricuspid Atresia	23	1.8
Ebstein's Anomaly	5	0.4
TruncusArteriosus	25	1.9
OTHERS	43	3.3

heart defects in infants and young children were mention (table1).3.3% were found in group others, whichincluded DORV (double outlet right ventricle), Dextrocardia, Hypertrophied interventricular septum, congenital Mitral regurgitation, Congenital Mitral stenosis, and Aortic stenosis.

4. Discussion

Congenital heart disease (CHD) incidence is 8 in 1000 live birth which is found to be common birth defect.It is noticed that 1/3rd of such cases need early surgery or intervention[5,6,7]. Early diagnosis and improvement in surgical skill improve the outcome and survival rate in congenital cardiac anomalies[8]. Our study revealed that detection of CHDs were 72.5% in suspected referral babies by echocardiography. The relative frequencies of acyanotic CHDs and cyanotic CHDs were 83%, and 17% respectively. Acyanotic cardiac lesion was more frequent than cyanotic cardiac lesion as supported by Abraham et al[9].

Cyanotic cardiac lesion may be not referred at proper time because of high morbidity and mortality in our setup because it may be also high as mention by Amro, K. [10]. In our study 22.3% of children had PDA which was the second common acyanotic defect in which we already excluded pre-term and neonatal duct, same was reported byKorkmazet al[11]. The third most frequent acyanotic heart defect was atrial septal defect in frequency accounting 10.7% in our study also supported by other study[2,3,11]. ASD because of soft murmur and asymptomatic do not lead to early diagnosis. That is why many of these cases present in adult life.

Among the cyanotic lesion Tetralogy of Fallot was the commonest cyanotic congenital heart disease followed by transposition of the great arteries being 5.9% and 5.4% respectively. Same result supported by Saleb, H.K.[2], and Aworiet al[11].The result of TOF and TGA were different from other literature studies due to limited time, limited sample size and specific inclusion criteria of our study.

Our study supported that inspite of poor health structure and limited resources with poor referral mode, the incidence of cardiac defect is very high in suspected children who mostly referred from tertiary hospital.

5. Conclusion

The prevalence regarding congenital heart diseases detected more acyanotic than cyanotic heart diseases. Ventricular septal defect found to be the commonest in acyanotic lesion and Tetralogy of Fallot the commonest cyanotic heart defect .

5.1 Limitations

This is a single center study, thus, further research based on multi-center is needed.

6. Acknowledged

Thanks for Amina and Saima echo-technician, and Faiza who helped in data collection and echocardiography recording of echo with managing at workstation.

7. References

1. Julien, I.E., Hoffman, M.D. and Kaplan, S., (2002). The Incidence of congenital heart disease. 39: 1890-900.
2. Saleb, H.K. (2009). Pattern of congenital heart disease in southern yemni children referred for echocardiography. 30(6): 824-828.
3. Amro, K. (2009). Pattern of congenital heart disease in Jordan. 6(3): 161-165.

4. Miranovic, V. (2014). The incidence of congenital heart diseases. 142(3-4): 243-248.

5. Ferencz C, Rubin JD, McCarter RJ, et al. Congenital heart disease: prevalence at livebirth. The Baltimore–Washington Infant Study. Am J Epidemiol. 1985;121(1):31–36pmid:3964990

6. Hoffman JI. Incidence of congenital heart disease: II. Prenatal incidence.PediatrCardiol. 1995;16(4):155–165pmid:7567659

7. Talner CN. Report of the New England Regional Infant Cardiac Program, by Donald C. Fyler, MD, Pediatrics, 1980;65(suppl):375–461. Pediatrics.1998;102(1 pt 2):258–259pmid:9651450

8. Tworetzky W, McElhinney DB, Reddy VM, Brook MM, e.t all. Improved surgical outcome after fetal diagnosis of hypoplastic left heart syndrome. Circulation.2001;103(9):12691273pmid:11238272

9. Moons, P., Sluysmans, T., Wolf, D.D., Massin, M., Suys, B., Abraham, B. and Gewiling, M., (2008). Congenital heart diseases in 111225 births in Belgium: birth prevalence treatment and survival in the 21st centry. 7(4): 472-477.

10. Korkmaz, U.K., Ozkan, E.A., Akkoca, A.N. and Sivasliogluo, E., (2015). Incidence and clinical characteristics of congenital heart disease among neonates in Neonatal Intensive Care Unit. 3(3): 161-165.

11. Awori, M. and Ogendo, S. (2013). The spectrum of paediatric congenital heart disease at the Kenyatta National Hospital. 10: 8-10.