

# PATTERN OF CONGENITAL HEART DISEASE AT LADY READING HOSPITAL PESHAWAR

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## ABSTRACT

**Background:** Congenital heart disease is a defect in the structure of heart and great vessels present at birth. Early recognition will help to treat the child and if possible get corrective surgery done. The aim of this study was to see the pattern of congenital heart disease in our set-up.

**Material & Methods:** This descriptive study was conducted at Department of Pediatrics, Lady Reading Hospital, Peshawar, from June 2010 to July 2011. Patient from birth to 10 years of age with clinical and echocardiographic evidence of congenital heart disease were included. Demographic profile was noted.

**Results:** A total of 114 patients with clinical and echocardiographic evidence of congenital heart disease were included. They were 60(52.6%) males and 54(47.4%) females with a male to female ratio of 1.1:1. Among these, 79(69.30%) had acyanotic and 35(30.7%) cyanotic congenital heart disease. Ventricular septal defect (29%) followed by patent ductus arteriosus (14.9%), atrial septal defect (10.5%) and pulmonary valve stenosis (7.1%) were the most common acyanotic congenital heart diseases, whereas Fallot's tetralogy (12.3%) followed by transposition of great vessels (7%) were the commonest cyanotic congenital heart diseases.

**Conclusion:** Congenital heart diseases are not uncommon in our set-up. VSD is the commonest acyanotic and Fallot's tetralogy as cyanotic congenital heart disease.

**KEY WORDS:** Congenital heart disease, Cyanotic congenital heart disease, Acyanotic congenital heart disease.

## INTRODUCTION

Congenital heart disease (CHD) is one of the most common structural malformation and comprises up to 25% of all congenital anomalies. It contributes significantly to infant morbidity and mortality.<sup>2</sup> It occurs in 0.5–0.8% of live births,<sup>1</sup> and each year there are about 1.5 million new cases worldwide.<sup>3</sup>

Congenital heart disease has a wide spectrum of severity in infants: about 2–3 in 1,000 newborns infant will be symptomatic with heart disease in the first year of life.<sup>1</sup>

The prognosis for children with CHD has improved dramatically over a 20 years period. In 1986, 60% of deaths from CHD occurred in the first year of life, whereas in 1990s the majority of deaths occurred in adults over the age of 20.<sup>4</sup> It is predicted that 78% of the babies with congenital heart disease today will survive into adulthood.<sup>5</sup>

Incidence of CHD is underestimated 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 person.<sup>6</sup>

Congenital cardiac defects are grossly divided into two types; acyanotic and cyanotic heart diseases, the former being more common. Ventricular septal defect and Tetralogy of Fallots are the commonest among acyanotic and cyanotic congenital heart disease respectively.

The aim of this study was to see the pattern of congenital heart disease in our set-up.

## MATERIAL AND METHODS

This was a descriptive study carried out for a period of one year, from June 2010 to July 2011, at Pediatric Department, Lady Reading Hospital, Peshawar. Patient from birth to 10 years of age with clinical and echocardiographic evidence of congenital heart disease were included. Demographic profile (name, age, sex) was noted. All the data was recorded on a proforma, and the data entered and analyzed for frequency, percentages and means on SPSS version 10.

Examination pertinent to cardiovascular system was done. Echocardiography 2D with Doppler examination was performed. Consideration was given to total number of cases of congenital heart disease, age at presentation, sex distribution and type of congenital heart disease. Patients with bicuspid aortic valve in the absence of aortic

**Table 1: Sex and percentage distribution of Congenital Heart Disease.**

S. No	Cardiac lesion	Number	Male	Female	Percentage
1	Ventricular septal defect	33	19	14	29%
2	Patent ductus arteriosus	17	3	14	14.9%
3	Atrial septal defect	12	9	3	10.5%
4	Pulmonary valve stenosis	8	6	2	7.1%
5	Atrio-ventricular canal defect	5	1	4	4.4%
6	Coarctation of Aorta	4	1	3	3.5%
7	Tetralogy of Fallot	14	10	4	12.3%
8	Transposition of the great arteries	8	5	3	7%
9	Complex congenital heart disease	7	3	4	6.1%
10	Tricuspid atresia	3	1	2	2.7%
11	Truncus arteriosus	2	1	1	1.8%
12	Total anomalous pulmonary venous return (APVR)	1	1	0	0.9%

valve stenosis, mitral valve prolapse; and cardiac malposition unaccompanied by structural heart disease were excluded. Premature babies and patient with acquired heart diseases were also excluded.

## RESULTS

A total of 114 patients were included; 60 males (52.6 %) and 54 females (47.4%), with male to female ratio of 1.1:1. Patients were from newborn to 10 years of age with mean age of  $16.95 \pm 26.81$  months. More than two thirds (71%) patients were under 1 year of age. Out of these, 79 (69.3%) patients had acyanotic and 35 (30.7%) cyanotic congenital heart lesions. Ventricular septal defect followed by patent ductus arteriosus, atrial septal defect, and pulmonary valve stenosis were the commonest acyanotic congenital heart defects; 29 %, 14.9%, 10.5%, 7.1% respectively. Tetralogy of Fallot (12.3%) followed by transposition of the great arteries (7 %) were the commonest cyanotic congenital heart diseases. (Table 1)

## DISCUSSION

The objective of the present study was to determine the pattern of congenital heart disease at Lady Reading hospital Peshawar, however it does not give a true prevalence of CHD in the total population. In the present study, there is slight predominance of male sex among patients with congenital heart disease, coinciding with a number of reports,<sup>7-12</sup> while in other studies, the number of cases were higher among females,<sup>13-16</sup> or no

difference between sexes were observed.<sup>17-19</sup> There was a female predominance in patent ductus arteriosus and AV canal defects 82.35% and 80% respectively. This finding is consistent with that reported by Kenna et al<sup>20</sup>, Khaled et al<sup>21</sup>, and Aman et al<sup>22</sup> but contrary to that observed by Masood et al.<sup>8</sup>

Most of the cases (71%) are detected in infancy. It is consistent with studies done by Masood et al<sup>8</sup> and Akhtar et al<sup>23</sup> nationally and by Subramanyan et al<sup>24</sup> in Oman and George & Frank-Brigs in Nigeria.<sup>25</sup>

In our study the frequency of VSD was 29%. This is comparable to worldwide incidence (25–30%)<sup>1</sup> and to that reported by Masood et al<sup>8</sup> and Abbag<sup>26</sup> but is less than what is reported by Burki & Babar<sup>19</sup> and Shann.<sup>27</sup> Patent ductus arteriosus is the next most common acyanotic CHD (14.9%) in this study. It is consistent with that reported in Saudi Arabia<sup>26</sup> but higher than that reported by Khaled et al<sup>21</sup> and Rahim et al.<sup>28</sup> Atrial septal defect ranked third in frequency (10.5%) in our study which correlates with Abbag.<sup>26</sup> This observation is however contrary to Khaled et al,<sup>21</sup> Aman et al,<sup>22</sup> and Ahmad et al.<sup>29</sup> Pulmonary valve stenosis is the fourth most common acyanotic congenital heart lesion (7.1%) in this study. It is also consistent with that reported by other authors.<sup>21,22</sup> There is a significant difference in the incidence of Coarctation of aorta in the developing countries as compared to that of developed countries.<sup>30,31</sup> It is reported to be 3.5% in our study as compared to 10.2% in Sweden.<sup>32</sup>

Tetralogy of Fallot followed by transposition of the great vessels were the commonest cyanotic congenital heart lesions in our study. This finding is similar to other studies nationally<sup>23</sup> and internationally.<sup>21</sup> Complex congenital heart disease was seen in 6% patients in this study which is comparable with other studies.<sup>8,22,33</sup>

The cause of most congenital heart disease is unknown. Most cases are thought to be multi-factorial and result from a combination of genetic predisposition and environmental stimuli.<sup>1</sup>

A growing list of CHD has been associated with specific chromosomal abnormalities, and several have been linked to specific gene defects.<sup>1</sup> This emphasizes the importance of genetic counseling to patients with family history of congenital heart disease.<sup>34,35</sup>

## CONCLUSION

Congenital heart diseases are not uncommon in our set-up. Ventricular septal defect is the commonest acyanotic and Fallot's tetralogy as cyanotic congenital heart disease.

## REFERENCES

1. Brestein D. Epidemiology and genetic Basis of Congenital Heart Disease Prevalence. Nelson Test Book of Pediatrics, 18<sup>th</sup> edition 2007; 1878-1881.
2. Aburawi EH. The Burden of Congenital Heart Disease in Libya. Libyan J. Med 2006; 1: 120-2.
3. Moller JH, Taubert KA, Allen HD, et al. Cardiovascular health and disease in Children: current status. A special writing group from the task force on children and youth, American Heart Association. Circulation 1994;89: 923-30.
4. Mortality from Congenital Heart Disease, British Heart Foundation's Statistics Website
5. Perloff JK, Warnes CA. Challenges posed by adults with repaired congenital heart disease. Circulation 2001;103:2637-43.
6. Ferencz C, Rubin JD, Meconter SDJ. Congenital Heart Diseases Prevalence at live birth. The Baltimore Washington infant study. Am J Epidemiol 1985;121:
7. Rahim F, Younas M, Gandapur AJ, Talat A. Pattern of congenital heart Diseases in children at tertiary care center in Peshawar. Pak J Med Sci 2003;19:19-22.
8. Masood N, Sharif M, Asghar RM, et al. Frequency of Congenital Heart Diseases at Benazir Bhutto Hospital Rawalpindi. Ann Pak Inst Med Sci 2010;6:120-3.
9. Malik S, Majeed R, Channer MS, Saleem MI. Frequency of cardiac defects among children at echocardiography centre in a teaching hospital. Pak J Med Sci 2009;25:712-7.
10. Montaña E, Muin KJ, Janet CD, Shiva S, Pradip D, Derek F. Trends and outcomes after prenatal diagnosis of congenital cardiac malformations by fetal echocardiography in a well-defined birth population, Atlanta, Georgia, 1990-1994. J Am Coll Cardiol 1996;28:1805-9.
11. Trunghelli HA. Epidemiología de las cardiopatías congénitas en el Hospital de Niños Eva Perón de Santiago del Estero. Arch Argent Pediatr 2002;100:130-5.
12. Domenech E, Perera C, García A, Torres ML, Castro R, Méndez A, et al. Análisis de las cardiopatías congénitas durante el primer año de vida (1987-92). Rev Esp Pediatr 1993;49:407-14.
13. Cloarec S, Mahontier N, Vaillant MC, Paillet C, Chantepie A. Prévalence et répartition des cardiopathies congénitales en Indre et Loire. Évaluation du diagnostic anténatal (1991-194). Arch Pediatr 1999;6:1059-65
14. Grech V. Spectrum of congenital heart disease in Malta. An excess of lesions causing right ventricular outflow tract obstruction in a population-base study. Eur Heart J 1998;19:521-5.
15. Robida A, Folger GM, Hajar HA. Incidence of congenital heart disease in Qatari children. Int J Cardiol 1997;60:19-22.
16. el Hag AI. Pattern of congenital heart disease in Sudanese children. East Afr Med J 1994;71:580-6.
17. Jaiyesimi F, Ruberu DK, Misra VK. Pattern of congenital heart disease in King Fahd Specialist Hospital, Buraidah. Ann Saudi Med 1993;13:407-11.
18. Tefuarani N, Hawker R, Vince J, Sleigh A, Williams G. Congenital heart disease in Papua new Guinean children. Ann Trop Paediatr. 2001;21:285-92.
19. Burki MK and Babar GS. Prevalence and Pattern of Congenital Heart Diseases in azara. J Ayub Med Coll 2001;13:16-8.
20. Kenna AP, Smithells RW, Fielding DW. Congenital Heart Diseases in Liverpool: 1960-69. Q J Med 1975;44:17-44.
21. Khaled A. Pattern of congenital heart disease in Jordan. Eur J Gen Med 2009; 6:161-5.
22. Aman W, Sherin A, Hafizullah M. Frequency of congenital heart diseases in patients under the age of 12 years at Lady Reading Hospital Peshawar. JPMI 2006;20:64-9.
23. Akhtar K, Maadullah, Ahmed W. Profile of congenital heart disease and correlation to risk adjustment for surgery; an Echocardiographic

- study. *J Coll Physicians Surg Pak* 2008;18:334-7.
24. Subramanyan R, Joy J, Venugopalan P, Sapru A, Al-Khusaiby SM. Incidence and spectrum of congenital heart disease in Oman. *Ann Trop Paediatr* 2000;20:337-41.
  25. George IO and Frank-Brigs AI. Pattern and clinical presentation of congenital heart disease in Port-Harcourt. *Niger J Med* 2009;18:211-4.
  26. Abbag F. Pattern of Congenital Heart Disease in the Southwestern Region of Saudi Arabia. *Ann Saudi Med* 1998;18:393-5.
  27. Shann M. Congenital Heart Disease in Taiwan, Republic of China. *Circulation* Vol XXXIX Feb 1969.
  28. Rahim F, Younas M, Gandapur AJ, Talat A. Pattern of congenital heart Diseases in children at tertiary care center in Peshawar. *Pak J Med Sci* 2003;19:19-22.
  29. Ahmad R, Awan ZA, Bukshi F. A prevalence study of congenital heart disease in NWFP, Pakistan. *Pak J Med Sci* 2002;18:95-8.
  30. Jaiyesimi F, Ruberu DK, Misra VK. Pattern Of Congenital Heart Disease In King fahd specialist Hospital, Buraidah. *Ann Saudi Med* 1993;13:407-11.
  31. Venugopalan P, Agarwal AK, Johnston WJ, Riveria E. spread Of Heart diseases Seen In An Open-access Paediartic Echocardiography Clinic. *Int J Cardiol* 2002;84:211-6.
  32. Pradat P. Epidemiology of major congenital heart defects in Sweden, 1981-1986. *J Epidemiol Community Health* 1992;46:211-5.
  33. Sadiq M, Roshan B, Khan A, Latif F, Bashir I, heart disease in Ceylon. *Br Heart J* 1970;
  34. Sheikh SA. Pattern of paediatric heart disease in Pakistan. *J Coll Physicians Surg Pak* 2002;12:149-53.
  35. Smitha R, Karat SC, Narayanappa D, Krishnamurthy B, Prasanth SN, Ramachandra NB. Prevalence of Congenital Heart Diseases in Mysore. *Indian J Hum Gen* 2006;12:11-16.

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