

Incidence of congenital heart disease in tertiary care hospital

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Abstract

Aims and Objectives: The present study was under taken to determine the spectrum, clinical profile and outcome of patients with congenital heart disease (CHD) admitted to a tertiary care hospital.

Materials and methods: This is a retrospective, observational hospital based study conducted during January 2006 to December 2006. Out of 14461 admissions, 84 were cases of CHD. Only patients with echocardiographic proof of CHD were included in the study. Detailed clinical and laboratory findings and outcome of all cases were noted in pre-structured formats. Data were entered in MS-excel. Data was analyzed by software SPSS version 10.

Results: The incidence of CHD was 5.8 per 1000 hospitalized patients. Out of 84 CHD cases, 51 were males and 33 females; with a male to female ratio of 1.5:1. CHD presented more frequently during infancy (46 %). Acyanotic heart disease was detected in 58 (69 %) cases while cyanotic heart disease was detected in 26 (31%) cases. Among acyanotic heart disease, ventricular septal defect (VSD) was found in 49 (58.3%), atrial septal defect (ASD) in 4 patients (4.8%), endocardial cushion defect (ECD) in 2 patients (2.4%) and dextrocardia was found in 3 patients (3.6%). Among cyanotic heart disease, Tetralogy of Fallot (TOF) accounted for 13.1%, total anomalous pulmonary venous connection (TAPVC) 3.6%, transposition of great arteries (TGA) with VSD 1.2% and unspecified cases of heart disease was found in 13.1%. VSD and TOF were the most common lesions while other CHD like ASD, dextrocardia, TAPVC, ECD, TGA with VSD were encountered less frequently. The most common clinical presentations were failure to thrive (FTT) and developmental delay (86.9%), breathlessness (69%), lower respiratory tract infection (LRTI) (52%), congestive cardiac failure (CCF) (46%), cyanosis (20.2%), cyanotic spell (9.5%) and infective endocarditis (9.5%). The mortality rate was 20 %.

Conclusion: The incidence of CHD was 5.8 per thousand hospitalized children. VSD, TOF were the most common congenital cardiac lesion. VSD was observed either isolated or associated with other lesions like TGA. The mortality rate was 20 %. The mortality usually occurred in those patients complicated with congestive cardiac failure, lower respiratory tract infection and infective endocarditis.

Key words: congenital heart disease, epidemiology, ventricular septal defect, Tetralogy of Fallot.

Congenital heart disease (CHD) refers to the structural or functional heart disease which is present at birth. It is one of the leading causes of mortality in the first year of life¹⁻³. It has been estimated that some types of CHD can be related to the defects in the chromosome, gene or environmental factors⁴. According to the Merck Manual of Diagnosis, Atrial septal defect (ASD), Ventricular septal defect (VSD), Tetralogy of Fallot (TOF), Patent Ductus Arteriosus (PDA), Pulmonary Stenosis (PS), Aortic Stenosis (AS), Coarctation of Aorta (COA) and atrioventricular septal defect accounts for 85% of all CHDs. Prevalence of CHDs in Chandigarh (5%), Punjab (3%) and south India (2.5%) are higher than other parts of the world⁵⁻⁷. This study was aimed to find out the spectrum, clinical profile and outcome of patients admitted with congenital heart disease in a tertiary care hospital.

Materials and methods

This study was carried out at BP Koirala Institute of Health Sciences, Dharan, Nepal during the period January to December 2006. It was a retrospective observational hospital based study and included 84 cases of congenital heart disease in the age group below 15 years. All patients were evaluated for clinical features; radiological, echocardiographic findings and outcome were noted and analyzed. The analysis was done by using soft ware SPSS version 10.

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Results

The incidence of congenital heart disease observed in our study is 5.8 per thousand children. This study showed that congenital heart disease presented more frequently during infancy. There were 60.7% males and 39.3% females with a male to female ratio of 1.5:1. Among the acyanotic congenital heart disease 58.3% were VSD, 4.8% ASD, 3.6% Dextrocardia, and 2.4% ECD. Among cyanotic heart disease TOF]

accounted for 13.1%, TAPVC 3.6 %, TGA with VSD 1.2%. Our study showed VSD and TOF was the most common congenital cardiac lesions. Common presentations were failure to thrive and developmental delay, breathlessness, LRTI, FFT, CCF and cyanotic spell. Mortality rate was 20.2%. Death usually occurred due to its complications.

Table 1: Age and sex distribution of Congenital Heart Disease (N = 84)

	Number	Percentage (%)
Sex		
Male	51	60.7
Female	33	39.3
Age		
< 1 month	8	9.5
1 month – 1 year	39	46.4
1 – 5 year	26	31.0
6 – 9 year	4	4.8
≥10 years	7	8.3

Table 2: Symptomatology of various cases of Congenital Heart Diseases

Symptoms	Number	Percentage (%)
Cyanosis	17	20.2
Breathlessness	58	69.0
LRTI	44	52.4
Cyanotic spell	8	9.5
CCF	46	54.8
FFT	10	11.9
Developmental delay	73	86.9
Infective Endocarditis	8	9.5

Table 3: Two dimensional echocardiographic diagnosis of various Congenital Heart Disease

Diagnosis	Number	Percentage (%)
Acyanotic heart disease		
VSD	49	58.3
ASD	4	4.8
ECD	2	2.4
Dextrocardia	3	3.6
Total:	58	69
Cyanotic CHD		
TOF	11	13.1
TAPVC	3	3.6
TGA with VSD	1	1.2
Unspecified	11	13.1
Total:	26	31

Table 4: Comparison of our finding with other studies

Type of defect	Our study (84) N (%)	Bidwai et al ⁹ (378) N (%)	Jain et al ¹⁰ (55) N (%)	Kasturi et al ¹¹ (108) N (%)
Acyanotic CHD				
VSD	49(58.3)	91(24)	25(45.4)	29(27)
ASD	4(4.8)	20(21.96)	2(3.6%)	26(24)
ECD	2(2.4)	0	2(3.6)	0
Dextrocardia	3(3.6)	0	0	0
Cyanotic CHD				
TOF	11(13.1)	0	10(18.6)	10(9)
TAPVC	3(3.6)	0	0	0
TGA with	1(1.2)	0	0	0
VSD				

Discussion

CHD occurs in 8 per 1000 live births and comprises one of the major diseases in the paediatric age group⁸. It has become an important cause of morbidity and mortality in infancy and accounts for two-thirds of all major birth defects along with neural tube defect⁹. Eighty four patients aged below 15 years presenting with sign and symptoms of CHD were evaluated in this study. Our study showed a male preponderance, which is in accordance with studies by Chadha et al⁸, Bidwai et al⁹ and Jain et al¹⁰. There are gender differences in the occurrence of specific heart lesions. TGA and left sided obstructive lesions are slightly more common in boys (around 65%), whereas VSD, PDA and PS are more common in girls¹¹. When symptoms were taken into consideration we found FTT and developmental delay in 86.9%, breathlessness in 69%, LRTI in 52%, CCF in 46%, cyanosis in 20.2%, cyanotic spell in 9.5% and sign and symptom of infective endocarditis in 9.5%. Among acyanotic congenital heart disease we found VSD in 58.3%, ASD in 4.8%, ECD in 2.4% and dextrocardia in 3.6%. Among the cyanotic congenital heart disease we found TOF in 13.1%, TAPVC in 3.6%, TGA with VSD 1.2% and unspecified heart disease in 13.1%. When considering the age at presentation, we found maximum number of children were picked up in infancy. FTT and developmental delay was seen in 86.9% cases. FTT and developmental delay is a major symptom of CHD, the reason being low energy expenditure, inadequate food intake, and mal absorption or feeding difficulty. Breathlessness was the commonest symptom both in cyanotic and acyanotic heart disease. LRTI and FTT were maximally seen in cases of VSD. Cyanosis was found in 20.2% cases and this was commonest among patients with TOF.

Conclusion

The incidence of congenital heart disease observed in our study was 5.8 per 1000 children. In our study, ACHD comprised 58 cases of which VSD with or without associated defect accounted for 58.3% cases. Among CCHD, TOF was the commonest, accounting for 13.1% cases. Growth and development is markedly affected in cases of CHD. 86.9% had growth failure and delayed physical milestone. The mortality rate in our study was 20% causes being refractory failure, complex congenital heart disease and infective endocarditis. Therefore we recommend that all murmur should be screened unless thought to be physiological. Cardiac evaluation should be done in all cases of repeated chest infection and FTT. CHD needs regular monitoring so as to permit optimal growth and development. Early diagnosis and timely intervention will reduce the morbidity and mortality to a large extent.

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References

1. Noon JA, Ehmke DA, Associated non cardiac malformations in children with congenital heart disease. *J Pediatr* 1963;63:468-71.
2. Greenwood RD. The cardiac examination in children. *Am Fan Physic* 1985;63:468.
3. Quiraoga M, Garcia E. Morbimortalidad perinatal. *Bol Med Hosp Infant* 1979;36:871-84.
4. Heart disease and stroke statistics. [Online]. 2003. Available from: URL:<http://www.americanheartassociation.com>

5. Frias JL, Gessner IH, Victorica BE (editors). Pediatric cardiology: Genetics issues of congenital heart disease. Philadelphia: Saunders; 1993. p. 237-42.
6. The Merck Manual of Diagnosis. [Online]. Available from:
URL:<http://www.americanassociation.com>
7. Manchandha SS, Sachdev KK. Morbidity and mortality in children in Northern India (Punjab). Indian J Pediatr 1962;29:335-50.
8. Chadha SL, Singh N, Shukla DK. Epidemiological study of congenital heart disease. Indian J. Pediatr 2001;68:507-10.
9. Bidwai PS, Mahajan CM, Walia BNS, Berry JN. Congenital heart disease in childhood. A clinical study. Indian Pediatr 1971;7: 691-94.
10. Jain KK, Sagar A, Beri S. Heart disease in children. Indian J Pediatr 1971;38:441-48.
11. Kasturi L, Kulkarni AV, Amin A, Mahashankar VA. Congenital heart disease: clinical spectrum. Indian Pediatr 1999;36:953.