



Clinical profile of congenital heart disease in a tertiary hospital

Dr. Vinaykumar Nandimalla

Pediatric Resident, Krishna Institute of Medical Sciences, Karad, Maharashtra, India

Abstract

Objectives: To see the (a) type of congenital heart disease, (b) Clinical presentation of the cases, (c) association with extra-cardiac anomalies and disease, (d) complications of different CHD, (e) outcome of patients during hospital stay.

Methodology: it was a prospective study conducted in the department of pediatrics of KIMS Karad over a period of one year from Jan 2018 to Dec 2018. 100 children from birth to 12 years of age who had congenital heart disease confirmed by echocardiography were included. All patients were treated conservatively and observed for immediate outcome during the hospital stay.

Result: major types of CHD were VSD (40%), ASD (21%), TOF (15%), PDA (9%). Female outnumbered male child. Common symptoms were breathlessness (60%), fatigue (54%), cough (43%), poor weight gain (41%), recurrent chest infection (34%), fever (28%), feeding problems (26%), palpitation (21%) and bluish discoloration of lips and fingertips (20%). Murmur with or without thrill and cardiomegaly was the most important cardiac finding. Frequently observed complications were heart failure, pulmonary hypertension and growth failure

Keywords: CHD, heart failure, cardiomegaly

Introduction

Congenital heart disease (CHD) is the commonest of all congenital lesions and is the most common type of heart disease among children [1]. Congenital heart disease, in a definition proposed by Mitchell *et al* is “a gross structural abnormality of the heart or intrathoracic great vessels that is actually or potentially of functional significance [2]. The incidence of congenital heart disease is approximately 8 per 1000 live birth, with a higher rate in stillbirth, spontaneous abortion and prematurity [3, 4]. It is believed that this incidence has remained constant worldwide [5]. World Health Organization (WHO) reports, among all cardiovascular disease, the incidence of Congenital heart disease in Bangladesh is 6%, 15% in India, 6% in Burma, 10% in Sri Lanka [7]. The relative frequency of the most common lesions varies with different reports but nine common lesions form 80% of congenital heart disease (Jackson *et al*). [8] These are Ventricular Septal Defect (36%), Atrial Septal Defect (5%), Patent Arterial Duct (9%), Atrioventricular Septal Defect (4%), Pulmonary Stenosis (9%), Aortic Stenosis (5%), Coarctation of Aorta (5%), Transposition of Great Arteries (4%), Tetralogy of Fallot (4%). The other 20% of congenital heart disease consists of many rare or complex lesions [8]. Congenital heart disease as a whole occurs with equal frequency in male and females but some lesions such as aortic stenosis, coarctation of aorta, transposition of great vessels and tetralogy of Fallot are more common in males whereas atrial septal defects are more common in females [9]. The cause of most Congenital heart defects is unknown. Most cases of congenital heart disease are thought to be multifactorial and result from a combination of genetic predisposition and environmental stimulus [9]. The clinical presentation of congenital heart disease varies according to the type and severity of the defect [10]. In neonatal period the

presenting feature of congenital heart disease are cyanosis (with or without respiratory distress), heart failure (with or without cyanosis), collapse, an abnormal clinical sign detected on routine examination (e.g., absent femoral pulse or a heart murmur) [10]. In infancy and childhood the usual presenting features are cyanosis, digital clubbing, murmur, syncope, squatting, heart failure, arrhythmia, failure to thrive [11]. The adolescent and adults present with heart failure, murmur, arrhythmia, cyanosis, hypertension, late consequences of previous cardiac surgery (e.g., arrhythmia, heart failure) [11].

Material and Methods

This prospective study was carried out over a period of one year from Jan 2018 to Dec 2018 among the 920 newborns born in KIMS KARAD and children admitted in pediatric ward of KIMS KARAD, age ranging from 1 month to 12 years. The cases were included in the study when the diagnosis of CHD was established by echocardiography. After enrolment, detailed history of the studied patients was taken to know their clinical presentation. Moreover, thorough clinical examination was done to evaluate specific heart lesion. Apart from echocardiography other investigations like chest X-ray, electrocardiography and other relevant investigations were also done. All the data related to history, clinical examination, investigation and treatment were noted in a preformed datasheet with structured questionnaire. After checking all the data analysis was done using SPSS version [12].

Results

In this study the total number of patients suffering from CHD was 100. Commonest lesion was VSD (40%) followed by,

ASD(21%), PDA (15%),TOF(9%) and others (15%). Male and female ratio was 1.3:1. Males were predominant in VSD, TOF, A-V canal defect and single ventricle with single A-V canal defect. Females were predominant in ASD, PDA, COA, TGA and multiple lesion but equal distribution in PS. Major clinical presentations were breathlessness (69%), fatigue (63%), cough (50%), poor weight gain (48%), recurrent chest infection (40%), feeding problem (30%), cyanosis (23%), clubbing (20%), oedema (12%), anaemia (21%), polycythemia (22%), tachycardia (43%) and fast breathing (50%). Murmur with or without thrill and cardiomegaly were the most important cardiac finding. Frequently observed complications were heart failure (21%), pulmonary hypertension (2%) and growth failure (46%).

Table 1: Types of congenital heart disease in all patients from birth to 12 years of age

Type of lesion	No. of patient	Percentage
VSD	40	40%
ASD	21	21%
PDA	15	15%
TOF	9	9%
A-V Canal Defect	3	3%
PS	2	2%
COA	2	1%
TGA	1	1%
Single ventricle	1	1%
ASD+VSD	6	6%
Total	100	100%

Table 2: Symptomatology of congenital heart

Symptoms	No of cases	Percentage
Breathlessness	69	69%
Fatigue	63	63%
Cough	50	50%
Poorweight gain	48	48%
Rec chest infections	40	40%
Fever	33	33%
Feeding problems	30	30%
Palpitations	25	25%
Cyanotic spell	15	15%
Convulsion	2	2%

Table 3: Important physical findings in CHD

Physical findings	No of cases	Percentage
Dyspnea	53	53%
Fast breathing	50	50%
Tachycardia	43	43%
Chest indrawing	38	38%
Crepitations	29	29%
Cyanosis	23	23%
Polycythemia	22	22%
Anaemia	21	21%
Enlarged tender liver	21	21%
Clubbing	20	20%
Rhonchi	15	15%
Edema	12	12%
Engorged neck veins	8	8%
Hypertension	2	2%
Radio femoral delay	2	2%

Table 4: Important cardiac findings in different CHD

Type of lesion	Cardiomegaly	Thrill	Palpablep2	Heave	Fixed split	Singles2
VSD	40	40	9	8	0	0
ASD	1	0	3	5	17	0
PDA	5	7	0	0	0	14
TOF	5	9	2	2	0	0
A-V Canal Defect	1	2	1	1	0	2
PS	2	0	0	0	0	0
COA	2	0	0	0	0	0
TGA	1	0	0	0	0	0
Single Ventricle	0	0	0	0	0	0
ASD+VSD	6	6	1	1	1	0
Total	63	64	16	17	18	15

Table 5: Complications of different CHD

Complications	VSD	ASD	TOF	PDA	Others
Heartfailure	15	0	1	1	4
PH	7	5	0	3	1
growth failure	21	3	15	4	2
rec chest infection	22	7	1	5	2
cerebral abscess	0	0	1	0	0

Discussion

In this study the commonest type of Congenital heart disease was ventricular septal defect. This correlates with many studies [2, 3, 13, 14]. But this differs from Rahman *et al*, Siddique *et al* and Fatema *et al*. [15, 16, 17] They found ASD the commonest lesion. This difference in observation might be due to that Rahman *et al* and Siddique *et al* included many adult patients in their study. [15, 16] A significant proportion of VSD close spontaneously before adulthood and some untreated patients with large VSD die in childhood from heart failure. On the other hand ASD patients may remain asymptomatic in childhood and are diagnosed for the first time when they are adult. The study subject of Fatema *et al* were all newborn and many small sized VSD and most of the child with TOF may not manifest by that time [17]. This finding is quite similar to the current study.

In this study female and male ratio was 1.3:1, of which males were found more frequent in VSD, TOF, A-V canal defect and single ventricle whereas females were more frequently noted in ASD, PDA, COA, and TGA but equal distribution in PS. This gender distribution correlates partially with the observation of Mollah *et al* and Rao & Reddy [14, 18].

Of the different clinical features, breathlessness, cough, fatigue, poor weight gain, feeding problems, palpitation, cyanosis, clubbing oedema, - were the major ones and this observation were correlated well with other studies in Bangladesh [13, 14, 16], -India [19] and western countries. In this study we found a significant number of ASD cases were asymptomatic and admitted in hospital for some other disease condition. These cases were diagnosed incidentally during routine systemic examination. A small ASD can remain asymptomatic throughout life [11].

Cardiac findings revealed murmur with or without thrill and cardiomegaly were the most frequently observed feature. Cardiomegaly was found mostly in VSD cases. and also 88.2% cases of ASD. Continues machinery murmur was found in 100% cases of PDA; similar to Siddique *et al*. [16].

Conclusion

In the light of analysis and interpretation of the present study findings following recommendations can be made:

1. All newborn babies should be examined thoroughly for any evidence of CHD and a follow up examination should be advised in late infancy.
2. Children with undue fatigability, recurrent chest infection, failure to thrive should give due attention to exclude CHD.
3. Heart failure in infancy and childhood should be evaluated cautiously for presence of CHD.

References

1. Schoen FJ. The Heart. In: Cortan RS, Kumar V, Robins SL, 6th ed. Robins Pathologic Basis of Disease. Philadelphia: W.B. Saunders Company. 2010, 43-600.
2. Mitchell SC, Korones SB, Berendes HW. Congenital heart disease in 56,109 births. Incidence and natural history. *Circulation*. 1971; 43:323-332.
3. Fyler DC, Buckley LP, Hellenbrand WE, Cohn HE. Report of the New England Regional Infant Cardiac Program. *Pediatrics*, 65(2) Suppl: 375-461.
4. Jordan SC, Scoll O. 3rd ed. Heart disease in Paediatrics. London: Butterworths, 38
5. Abdulla R. What is the prevalence of congenital heart disease? *Ped Cardiol*; 18:268.
6. Malik A: Congenital and Acquired heart disease. A survey 7,062 Persons, Bangladesh Medical Research council Bulletin.2: 115.
7. Malik A. Problems of Cardiovascular disease in Bangladesh & other developing country. Proceeding of the Bangladesh-Japan joint conference on CVD, Dhaka, Bangladesh,
8. Jackson M, Walsh KP, Peart I, Arnold R. Epidemiology of congenital heart disease in Merseyside. *Cardiol Young*, 272-280.
9. Bernstein D. Congenital heart disease. In Behrman nRE, Kligman RM, Jenson HB, 17th ed. Nelson
10. textbook of Pediatrics. Philadelphia: Saunders, 2004; 1499-1553.
11. Kitchiner D J. Cardiovascular disease. In: McIntosh N, Helms PJ, Smyth RL, 6th ed. Forfer & Arneil's
12. Textbook of Pediatrics. Edinburgh: Churchill Livingstone, 2003; 815-888.
13. Bloomfield P, Bradbury A, Grubb NR, Newby DE. Cardiovascular Disease. In: Boon NA, Colledge
14. NR, Walker BR, 20th ed. Davidson's Principle and Practice of Medicine. Edinburgh: Churchill Livingstone, 2006; 519 646.
15. Camm AJ, Bunce NH. Cardiovascular Disease. In: Kumar P, Clark M, 6th ed. Kumar & Clark Clinical Medicine. Edinburgh: ElsevierSaunders, 2005; 725-872
16. Hussain M, Hossain M, Amin SK, Molla MR. Pattern of Congenital Heart Disease in Dhaka Shishu Hospital. *D S (Child) H J*; 8: 35-46.
17. Mollah MAH, Begum NA, Islam MN, Mahmud RS, Haq MA, Nahar N, Rashid MA. Clinical Profile of Congenital Heart Diseases (CHD): An Analysis of 218 Cases. *Bangladesh heart J*. 2002; 17:62-67.
18. Rahman S, Ahmed MN, Rahmatullah KHI, Alam MS. The Incidence of Congenital Heart Diseases Diagnosed by Non-Invasive Technique – Ten Years Study in Bangladesh. *D S (Child) H J*; 8:5-15.
19. Siddique FM, Kamal SMM, Huq KMSS. Clinical Presentation of Congenital Heart Disease in hos [italized patients. *Bangladesh Heart Journal*, 4, 13-17.
20. Begum NNF, Ahmed QS. Pattern of Heart disease among neonates and their outcome: one year experience in non-invasive cardiac laboratory of Combined Military Hospital, Dhaka. *Bangladesh J child health*. 2001; 25:48-52.
21. Rao VS, Reddy R. Profile of congenital heart disease in children. *Indian J Pediatr*. 2014; 41:244-248.
22. Vashetha VM, Kalra A, Kalra K, Jain VK. Prevalence of Congenital Heart Disease in School Children. *Indian J Pediatr*. 2008; 30:1337-1340.