Journal of Pharmaceutical and Scientific Innovation

www.jpsionline.com

Research Article

CLINICAL STUDY OF CONGENITAL HEART DISEASE IN INFANTS IN TERTIARY CARE HOSPITAL

Sandeep V.Harshangi*[1], Laxmi Nagaraj Itagi[2], Venkatesh Patil[3], Vijayanath.V[4]
[1]Assistant Professor, Department of Pediatrics, M.R. Medical College, Gulbarga, Karnataka, India
[2]Assistant Professor, Department of obstetrics & Gynecology, M.R. Medical College, Gulbarga, Karnataka, India
[3]Associate professor, Department of Pharmacology, Navodaya Medical College, Raichur, Karnataka, India
[4]Associate Professor, Department of Forensic Medicine & Toxicology, VMKV Medical College, Salem, Tamil Nadu, India

Received on: 08/01/13 Revised on: 05/02/13 Accepted on: 12/02/13

ABSTRACT
Congenital heart disease are primarily disease of neonates, infants and children. The burden of CHD in India is likely to be enormous due to very high birth rate. The reported incidence is 8-10/ 1000 live births. Objective was to know the pattern of clinical presentation of various congenital heart disease in 0-1 year age group. To study the different form of cyanotic and acyanotic congenital heart disease in present cases. 50 cases of CHD proven by 2D echocardiography were studied for 2 years period. Present study included all infants in birth – one year age group and excluded all preterm babies and patient with persistent pulmonary hypertension. Out of the 50 cases of congenital heart disease, 34 were acyanotic CHD and 16 cases of cyanotic CHD. VSD (30%) was the commonest acyanotic CHD while TOF (12%) was the commonest among cyanotic group. Growth retardation and CCF were the commonest complication. The mortality rate was 18% with VSD as the leading cause of death among the CHD. The commonest cause of death among these patients was refractory CCF. Most common CHD was acyanotic group with VSD being the commonest and among cyanotic the most common was TOF. A high index of suspicion, detailed history, physical, cardiovascular and other systemic examination, chest X-ray and electrocardiogram along with the use of 2D echocardiography helps us diagnose most of the cases of CHD. Children having murmurs should be screened unless thought to be physiological. A cardiac evaluation with echocardiography is also necessary in all cases of LRTI and FTT. Early diagnosis, close monitoring and timely intervention in cases of CHD will go a long way in reducing the morbidity and mortality to a large extent.
Keywords: Congenital heart disease; 2D echocardiography

INTRODUCTION

Congenital Heart Diseases (CHD) are primarily seen in neonates, infants and children, although in our country it is not uncommon to see adults with uncorrected CHD. The burden of congenital heart disease in India is likely to be enormous due to a very high birth rate. This heavy burden emphasizes the importance of this group of heart diseases. The reported incidence of CHD are 8-10/1000 live births according to various studies from different parts of the world.[1] It is believed that this incidence has remained constant worldwide.[2]

Nearly one-third of these CHD are critical requiring intervention in the first year of life itself.[3] Rapid advances have taken place in the diagnosis and treatment of CHD over the last six decades. There are diagnostic tools available today by which an accurate diagnosis of CHD can be made even before birth. With currently available treatment modalities, over 75% of infants born with congenital heart disease can survive beyond the first year of life and many can lead normal lives thereafter. However, this privilege of early diagnosis and timely management is restricted to children in developed countries only. Unfortunately majority of children born in developing countries with CHD do not get the necessary care, leading to high morbidity and mortality.

There is no community based data for the incidence of congenital heart disease at birth in India. Since a large number of births in our country take place at home, mostly unsupervised by a qualified doctor, hospital statistics are unlikely be truly representative. The congenital heart disease has been the subject of innumerable studies both regarding prevalence and clinical features in western countries. The few studies carried out in India were either community or school based and they did not indicate the clinical profile of CHD. It was therefore decided to carry out hospital based study of clinical profile of congenital heart disease in infancy at Basaveshwar Teaching & General Hospital and Sangameshwar Teaching Hospital attached to M.R. Medical College, Gulbarga.

OBJECTIVES

To know the pattern of clinical presentation of various congenital heart disease in 0-1 year age group.

To study the different form of cyanotic and acyanotic congenital heart disease in present cases.

METHODOLOGY

Methods of collection of data:

Infants presenting with features suggestive of congenital heart disease and proven by 2D echocardiography were studied over a period of 2 years from October 2005 to September 2007 admitted in Sangameshwar Hospital, Gulbarga and Basaveshwar Teaching & General Hospital, Gulbarga. Study was carried out as per Institutional Ethical committee clearance number: MRMC/ IEC/ 19/2005.

Inclusion Criteria:

All patients presenting with clinical features like breathlessness, recurrent LRTI, failure to thrive, cyanotic spells, congestive cardiac failure, murmur in the age group of term neonates to first birthday.

Exclusion Criteria:

- Preterm neonates.
- More than one year.
- Patients with persistent pulmonary hypertension.

RESULTS.

To study the different form of cyanotic and acyanotic congenital heart disease in present cases.

Table-1: Symptomatology of Various CHD

Symptomatology	No. of cases	Percent
Breathlessness	39	78.00
LRTI	30	60.00
FTT	20	40.00
Cyanosis	13	26.00
Fever	12	24.00
Asymptomatic	3	6.00

In the present study, when symptoms were taken into consideration. It was found that breathlessness was the commonest symptom seen in 39 cases (78%) followed by LRTI (60%), FTT (40%) cyanosis (26%, Fever (24%) and 6% were asymptomatic.

Table-2: Signs of CHD

Signs – GPE	No. of cases	Percent
Tachypnea	44	88.00
Tachycardia	38	76.00
Cyanosis	13	26.00
Fever	12	24.00
Edema	9	18.00

Commonest sign on general examination were tachypnea (88%) and tachycardia in 76% followed by cyanosis in 26% and fever in 24% of cases.

Table-3: X-Ray and ECG Findings and Murmur on Auscultation

Cardiac lesion	Total	Cardiac size		Pulmonary vascularity			ECG				Murmur			
		Normal	Enlarged	Increased	Decreased	Normal	Normal	LVH	RVH	BVH	PSM	ESM	CM	Normal
Acyanotic														
VSD	15	--	15	14	--	1	--	2	7	6	12	3	--	--
ASD	8	5	3	4	--	4	--	--	7	1	--	8	--	--
PDA	5	1	4	3	--	2	--	--	4	1	--	--	5	--
AVSD	2	1	1	--	--	2	--	--	1	1	1	1	--	--
Dextro cardia	2	2	--	--	--	2	2	--	--	--	--	--	--	2
HOCM	1	--	1	--	--	1	--	--	--	1	--	1	--	--
COA	1	--	--	--	1	--	1	--	--	1	--	1	--	--
Cyanotic														
TOF	6	--	--	--	6	--	--	--	5	1	--	6	--	--
TGV	3	1	2	3	--	--	--	--	1	2	2	1	--	--
TAPVC	2	2	--	1	--	1	--	--	2	--	--	2	--	--
Ebstein	2	--	2	--	--	2	2	--	--	--	--	2	--	--
DORV	1	--	1	1	--	--	--	--	--	1	--	1	--	--
Dextro cardia with pulmonary atresia with PDA	1	--	1	--	1	--	--	1	--	--	--	1	--	--
Dextro cardia with tricuspid atresia with ASD	1	--	1	--	--	1	--	--	1	--	--	1	--	--

Table-4: Associated Anomalies with CHD

Associated anomalies	No. of cases (n=12)	Percent
1. Musculoskeletal system	7	58.33
CTEV	3	42.8
Polydactyly	3	42.8
Webbed neck	1	14.28
2. Down syndrome	5	41.66

In the present study, associated anomalies were encountered in 12 out of 50 patients with musculoskeletal system being the commonest with 58.33% followed by Down syndrome with 41.66%. Among the musculoskeletal system, the most common were CTEV and polydactyly with 42.85% each and one case of webbed neck.

Table-5: Complications of CHD

Complications	No. of cases	Percent
Growth retardation	28	56.00
CCF	28	56.00
Bronchopneumonia	11	22.00
Cyanotic Spell	3	6.00
Systemic Hypertension	1	2.00
No complications	7	14.00

In the present study, both growth retardation and CCF were the commonest complication with 56% patient and next common was bronchopneumonia with 22%.

Mortality in CHD:

Mortality rate was 18% (9 cases).

Table-6: Mortality in CHD

Cause of death	No. of cases	Percent
Refractory CCF	6	66.6
Complex CHD	2	22.2
Septicemia with infective endocarditis	1	11.1

Out of 50 patients, 9 patients expired giving a mortality rate of 18%. Of all refractory CCF contributed the major cause of death in about 66.66% cases followed by complex CHD with 22.22% of cases and only one patient (11.11%) expired because of infective endocarditis with septicemia.

Symptoms:

In the present study, when symptoms were taken into consideration, we found breathlessness to be commonest symptom seen in 39 cases (78%) followed by LRTI (60%), FTT (40%). Fever (24%). Present study showed similar observation as shown by Tank S et al[4] 2004 and by other Indian studies. Breathlessness was the commonest symptom in both cyanotic and acyanotic CHD. LRTI and FTT were maximally seen with VSD and these patients had large defects. LRTI was also seen in ASD and PDA. FTT was seen in 7 out of 15 cases of VSD, 4 of 8 cases of ASD, 3 out of 5 cases of PDA, 4 out of 6 cases of TOF, 1 out of 3 cases of TGV. FTT is a major symptom of CHD, the reason being low

energy intake, inadequate food intake, and malabsorption or feeding difficulty. Tank S et al[4] 2004 reported 45%, while Keith et al[5] reported 35% of cyanotic spell.This was higher than the incidence of cyanotic spell seen in the present study. 13 cases gave history of cyanosis and this was seen commonly with TOF with all 6 patients giving history of cyanosis and 3 patients had cyanotic spell. 26% cases of CHD had cyanosis which were more common in cyanotic CHD. 3 cases (6%) were asymptomatic and were picked up on OPD basis.

Signs

Kasturi et al[6] 1999 reported among 108 cases of CHD, 63 (58%) were asymptomatic and 45 (42%) were symptomatic. Common signs and symptoms were feeding difficulty, cyanosis, tachypnoea, tachycardia, intercostals retraction and CCF. Present study showed similar observation among the signs. In a study by Linde ML et al[7] 1967 reported growth retardation was present in children with acyanotic CHD but was more pronounced in the cyanotic children. In the acyanotic group, growth retardation was most prominent in those with VSD. Present study reported 9 out of 15 cases of VSD and 4 out of 6 cases of TOF had growth retardation. This was in agreement with above study. In the present study on general examination, we observed tachypnoea was the commonest sign seen in 88% of cases, 76% of cases had tachycardia, followed by cyanosis seen in 26% cases and fever in 24% cases and dependent edema in 18% cases. Tachypnoea and tachycardia were commonly found in VSD, ASD and PDA i.e. left → right shunt type of CHD. Cyanosis were reported as commonest sign in cyanotic CHD patients.

X-Ray, ECG, Auscultatory Findings:

The finding of x-ray chest revealed cardiomegaly in 70.58% patient of acyanotic CHD, of which VSD constituted 44.11% followed by PDA with 11.76% and ASD(8.82%). Among cyanotic CHD cardiomegaly was seen in 43.75% with 2 patients each of TGV and ebstein anomaly (12.5%). Pulmonary plethora was seen in 21 patient (61.76%) of acyanotic CHD with VSD accounting for 14 patients (41.17%) followed by ASD with 4 patients (11.76%) and 3 patients of PDA (8.82%). Plethora was also seen in 5 patients of cyanotic CHD (31.25%) with TGV with 3 patients (18.75%). Pulmonary oligemia was seen in 7 patients (43.75%) of cyanotic CHD with TOF accounting for 6 patients (37.5%) out of the 7 patients. Normal lung field was visualized in 13 patients (38.23%) of acyanotic group and 4 patients (25%) of cyanotic group. Study done by Chadha et al[8] 2001 showed normal ecg in 40% patients with important ECG abnormalities being right ventricular dominance. Present study also was in accordance with this study. On looking at ECG, RVH was seen in 56% of cases while 28% showed biventricular hypertrophy and 8% showing LVH or normal ECG. On auscultation we found out PSM in 15 patients(30%) with VSD alone accounting for 12 patients (80%). ESM was auscultated in 28 patients (56%) with ASD accounting for 8 patients(28.57%) and TOF with 6 patients(21.42%) being the commonest. Continous murmur was auscultated in 5 patients (10%) with all cases of PDA. No murmur was heard in 2 cases (4%) of dextrocardia.

Extra Cardiac Associated Anomalies:

Khalil et al[9] 1994 reported an incidence of 17.9% of somatic anomalies with down syndrome being the commonest seen in 9.3% of cases. Present study reported 10 % incidence of down syndrome. Similar observation were reported by Kinare et al[10] 1987. In the present study we found the incidence of extra cardiac anomalies to be 24% (12 patient). Musculoskeletal anomalies were the most frequent with 7 cases (58.33%). The musculoskeletal abnormalities compromised of 3 cases (42.85%) of CTEV and polydactyly and 1 case (14.28%) of webbed neck. Present study also showed association of 5 cases (41.66%) of down syndrome.

Complication

Study by Rao VS et al[11] 1974, reported 72% with growth retardation. Study by Jain et al[12] 1971 reported CCF as the commonest complication. The present study shows 56% patients with growth failure and CCF as the commonest followed by 22% with bronchopneumonia, and 6% with cyanotic spell and 2% with hypertension. The present study is in concordance with the above study.

Mortality

Tank S et al[4] 2004 was reported overall 19.73% mortality which was higher in CCHD, the causes being subacute bacterial endocartitis, refractory failure, arrhythmias, sepsis and complex congenital cyanotic heart disease. Mortality is known to be higher in CHD. Observation in the present study was mortality rate of 18% (9 case). Out of the 9 cases, 5 cases of VSD, 2 complex CHD, 1 each of PDA and DORV. The most common cause of death was refractory CCF accounting for 66.66% and 22.22% mortality was because of complex CHD per se. 11.11% case expired because of septicemia with infective endocarditis. In the present study, refractory CCF was the most commonest cause of death, which was not in concordance with the above study, probably because of the age group involved in the study.

CONCLUSION

Out of the 50 proven cases of congenital heart disease studied from October 2005 to September 2007, the highest incidence was noted in 1 month to 1 year age group. Out of the 50 cases of congenital heart disease, 34 were acyanotic CHD and 16 cases of cyanotic CHD. VSD (30%) was the commonest acyanotic CHD while TOF (12%) was the commonest among cyanotic group

Breathlessness, LRTI, FTT, fever, tachypnea, tachycardia, cyanosis were the common clinical presentation of majority of cases. Male preponderance was noted in both cyanotic and acyanotic CHD. These children were deprived of basic medical care in the form of immunization. In our study 40% reported complete immunization while 18% were partial immunized and 42% were unimmunised.

Malnutrition was seen in 82% having less than 50th percentile anthropometric data.Musculoskeletal anomalies were commonest extra cardiac anomaly with Down syndrome the next most common. Growth retardation and CCF were the commonest complication. The mortality rate was 18% with VSD as the leading cause of death among the CHD. The commonest cause of death among these patients was refractory CCF. All cases of CHD needs regular monitoring and follow up so as to permit optimal growth and development.

A high index of suspicion, detailed history, physical, cardiovascular and other systemic examination, chest X-ray and electrocardiogram along with the use of 2D echocardiography helps us diagnose most of the cases of CHD. Children having murmurs should be screened unless thought to be physiological. A cardiac evaluation with echocardiography is also necessary in all cases of LRTI and FTT. Early diagnosis, close monitoring and timely

intervention in cases of CHD will go a long way in reducing the morbidity and mortality to a large extent.

REFERENCES

1. Fyler DC, Buckley LP, Hellenbrand WE, Cohn HE. Report of the New England Regional Infant Care program. Pediatrics. 1980; 65: Suppl: 375-461.
2. Abdullah R. What is the prevalence of congenital heart disease. Ped Cardio. 1997; 18: 268.
3. Hoffman JI, Kaplan S. The incidence of congenital heart disease. J Am Cardiol. 2002; 39: 1980-1900.
4. Tank S, Sushma M, Surekha J. Epidemiology of congenital heart disease among hospitalized patients. www.bhj.org/ journal/ 2004 4602 april.html. epidemiol.
5. Keith JD, Rowe RD, Vlad P. Heart disease in infancy and childhood. 3rd Edn., MacMillan NY, 1978; 365-40.
6. Kasturi L, Kulkarni AV, Amin A, Mashankar VA. Congenital heart disease clinical spectrum. Indian J Pediatr. 1999; 36: 953.
7. Linde LM, Dunn OJ, Schireson R, Rasot B. Growth in children with congenital heart diseasde. J Pediatr. 1967; 70: 413-419.
8. Chadha SL, Singh N, Shukla DK. Incidence of congenital heart disease. Indian J Pediatr. 2001; 68: 507-510.
9. Khalil A, Aggarwal R, Thirupuram S, Arora R. Incidence of congenital heart disease among hospital live births in India. Indian J Pediatr 1994; 31: 519-524.
10. Kinare SG, Sharma S. Congenital heart disease in first year of life (an autopsy study of 270 cases). Indian J Pediatr. 1981; 48: 745-754.
11. Rao VS, Reddi YR. Profile of heart in children. Indian J Pediatr. 1974; 41: 244-248.
12. Jain KK, Sagar A, Beri S. Heart disease in children. Indian J Pediatr. 1971; 38: 441-48.

QUICK RESPONSE CODE	ISSN (Online) : 2277 –4572
	Website http://www.jpsionline.com

How to cite this article:

Sandeep V.Harshangi*, Laxmi Nagaraj Itagi, Venkatesh Patil, Vijayanath.V. Clinical study of congenital heart disease in infants in tertiary care hospital. *J Pharm Sci Innov*. 2013; 2(1):15-18.