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Original Research Article

A Hospital-Based Assessment of the Spectrum of Congenital Heart Diseases in Children (<5 Years)

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Abstract

Aim: The aim of the present study was to assess the spectrum of congenital heart diseases in a tertiary care center in Bihar Region.

Methods: The present study was conducted in the Department of Pediatrics, IGIMS, Patna, Bihar, India from January 2017 to December 2017 and 200 patients were studied.

Results: We studied 200 patients in age group 0 to 5 years with clinical suspicion of CHD out of which 116 were male and 84 were female and maximum patients belonged to 1-12 months of age. The difficulty in breathing emerged as the most common presenting complaint, followed by feeding difficulty. The cases with VSD were found to be 32%, ASD were 30%, PDA were 8%, TOF were 5%, 13% cases were combination of multiple defects.

Conclusion: We concluded that VSD 32% was the commonest heart disease, followed by ASD 30%, congenital heart diseases showed male preponderance. VSD was the commonest cyanotic heart disease and TOF was the commonest cyanotic heart disease. The majority of patients were seen in the age group 1 to 12 months of age. Difficulty in breathing was the most common presenting complaint followed by feeding difficulty.

Keywords: Congenital heart disease, Tertiary care center, Bihar

Introduction

Congenital heart disease (CHD) is an abnormality in the structure or function of the cardio-circulatory system present at birth, even if diagnosed later. [1] It varies in severity, oc-curring from communications between cavities that spontaneously regress to major malformations that even require several procedures, by catheterization or by surgical means. It may result in mortality in the intrauterine, childhood, or adulthood period. [2] CHD is the most common (28%) major congenital anomaly and thus signifies a major global health problem. [3] The birth prevalence of CHD varies among studies worldwide and is mostly reported between 8 and 12 per 1000. [4,5] With a prevalence of 9 per 1000, approximately 1.35 million newborns are born with CHD every year globally. [5]

The prevalence of CHD in India in recent studies reports an increased prevalence of 8.5-13.6 per 1000 children. [6,7] In India, CHD contributes significantly to infant mortality (10%). [8] The common morbidities reported in children with CHD include developmental delay and cognitive deficits (20-30%). [9,10] A significant proportion of children born with CHD may lead a normal, productive life if diagnosed early and appropriate medical/surgical intervention is instituted. Thus, early detection of CHD and timely intervention are important for a better outcome in these children. [11,12]

Congenital heart disease is the most common congenital problem effecting nearly 25% of all children with congenital malformation [13] with an incidence of almost 8/1000 live births. [14] Early diagnosis and prompt treatment has great implication on prognosis and can result in significant decrease in morbidity and mortality. The relatively high birth rate in India, an average of 150,000 children are born with congenital abnormalities with 50,000 requiring surgeries in the first year of life and only one thousand cardiac surgeries are done in the early infancy. [15]

Despite vast improvements in medical field, congenital heart disease is still one of the leading cause of death and can present in different age groups from birth to adolescence. [16] The presentation of children with CHD can be very variable; they may be asymptomatic and discovered

only accidentally when a murmur is noted during checkup for an unrelated illness or routine neonatal checkup, [17] or may present with symptoms like cyanosis, clubbing of fingers nails to full blown congestive heart failure. [16,17]

The aim of the present study was to assess the spectrum of congenital heart diseases in a tertiary care centre in Bihar Region.

Materials and Methods

The present study was conducted in the Department of Pediatrics, IGIMS, Patna, Bihar, India from January 2017 to December 2017 and 200 patients were studied.

Inclusion Criteria

All children <5 years with clinically suspected congenital heart disease were included.

Exclusion Criteria

Patients with previously diagnosed heart diseases were excluded.

Procedure

In a period of 12 months, any patient <5 years with strong clinical suspicion of congenital heart disease attending inpatient and outpatient department of IGIMS, Patna, Bihar, India (including children's emergency and SNCU) was selected for study.

CHD was suspected based on the clinical features and an abnormal pulse oximetry value (<90%). A detailed history of patients was taken from their reliable informant with special emphasis on complaints suggestive of any cardiac illness. Developmental milestones and anthropometry was also assessed, general and systemic examination of patients was done and patients were also screened for presence of any other anomaly. All this was done using a pre-structured proforma. These patients were screened using NADAS criteria and were further classified into NADAS positive and negative. The confirmation of presence congenital heart disease was done using echocardiography. All those patients who were not found to have congenital heart disease on echocardiography were excluded.

Statistical Analysis

For age and sex distribution, we further divided the patients into 0 to 1 month, 1 to 12 months and >1 year to 5 years age group. Quantitative variables in each group were analyzed using mean. For clinical profile of patients, we again calculated mean of each complaint and for spectrum, mean of number of patients of each heart disease was calculated.

Results

Table 1: Age and sex distribution of congenital heart diseases

Age	Male	Female	Total	
	No.	No.	No.	%
0 to 1 month	40	36	76	38
1 to 12 months	60	32	92	46
1 to 5 years	16	16	32	16
Total	116	84	200	100

We studied 200 patients in age group 0 to 5 years with clinical suspicion of CHD out of which 116 were male and 84 were female and maximum patients belonged to 1-12 months of age.

Table 2: Clinical profile of patients presenting with congenital heart diseases

Symptoms	N (%)
Bluish discoloration of body	50 (25)
Recurrent respiratory infections	48 (24)
Palpitations/chest pulsations	22 (11)
Swelling of face and limbs	4 (2)
Forehead sweating	48 (24)
Impaired consciousness/unresponsiveness	14 (7)
Suck rest suck cycle/feeding difficulty	58 (29)
Difficulty in breathing	192 (96)
Any other symptom	24 (12)

The difficulty in breathing emerged as the most common presenting complaint, followed by feeding difficulty.

Table 3: Spectrum of congenital heart diseases in age group 0 to 5 years

Echo status	Male	Female	Total	
			No.	%
VSD	44	20	64	32
ASD	28	32	60	30
PDA	4	12	16	8
TOF	8	2	10	5
Complex (others)	18	8	26	13
TAPVC	4	0	4	2
AV canal defect	2	2	4	2
Single ventricle	2	0	2	1
HOCM	2	0	2	1
TGA	4	0	4	2
Pentalogy of fallot	0	2	2	1
Tricuspid atresia	0	4	4	2
Hypoplastic left heart syndrome	0	2	2	1

The cases with VSD were found to be 32%, ASD were 30%, PDA were 8%, TOF were 5%, 13% cases were combination of multiple defects.

Discussion

Congenital heart defects are the most common type of congenital anomaly, which constitutes an important group of pediatric illness and major cause of childhood mortality and morbidity. [18] Congenital malformations of the heart and circulation are not fixed anatomic defects that appear at birth but instead are anomalies in flux that originate in the early embryo, evolve during gestation, survive the dramatic circulatory alterations at birth, and change considerably during extra uterine life. [19]

We studied 200 patients in age group 0 to 5 years with clinical suspicion of CHD out of which 116 were male and 84 were female and maximum patients belonged to 1-12 months of age. The difficulty in breathing emerged as the most common presenting complaint, followed by feeding difficulty. The cases with VSD were found to be 32%, ASD were 30%, PDA were 8%, TOF were 5%, 13% cases were combination of multiple defects. This correlated with study done by Doshi et al [20] (2022) which included children between the age group of 0-18 years.

A study done by Kapoor et al [21] gives prevalence of 26.4/1000 patients. VSD was the commonest lesion (21.3%), followed by ASD (18.9%) and PDA (14.6%). Tetralogy of Fallot was the commonest cyanotic heart disease (4.6%), which correlates with our study. The prevalence in our study was also similar to the study done by Bibi et al [22] (2018) which showed a male preponderance with 57 (64%) male patients as compared to 32 (36%) female patients. Ventricular septal defect (VSD) was the commonest cardiac lesion being present in 34 (38.2%) patients. The prevalence also correlates with the study done by Bhardwaj et al (2014) and Samanek et al (1989) with both having VSD as the commonest congenital heart disease followed by ASD. [23,24]

The study done by Khalil et al [25] gives the incidence of CHD per 1000 live births. They studied 10964 live births and observed the incidence of 3.9/1000 live births. Patent ductus arteriosus (41.9%) and ventricular septal defects (VSD) (34.9%), were the commonest lesions with the incidence of 1.6 and 1.4/1000 live births, respectively.

Conclusion

We concluded that VSD 32% was the commonest heart disease, followed by ASD 30%, congenital heart diseases showed male preponderance. VSD was the commonest cyanotic heart disease and TOF was the commonest cyanotic heart disease. The majority of patients were seen in the age group 1 to 12 months of age. Difficulty in breathing was the most common presenting complaint followed by feeding difficulty.

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