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Original Research Article

STUDY OF CONGENITAL HEART DISEASE IN CHILDREN OF NORTH KARNATAKA

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Abstract

Background: Congenital heart anomalies (CHD) are an important cause of morbidity and mortality in children. They cause great financial burden and worry to parents and the whole family; hence, early detection may prevent morbidity and mortality in such children. **Materials and Methods:** Out of 70 children with CHD, 35 had acynotic CHD and 35 had cyclotic CHD. Every patient was exposed to 2-D echocardiography and a color dropper to rule out CHD and be classified as having acynotic or cyclotic CHD. **Result:** In acynotic CHD, the highest prevalence was 19 (54.2%) ventricular septal defects, and least 1 (2.85%) included atrio-ventricular septal defects, pulmonary stenosis, and aortic stenosis. In cynotic CHD, the highest prevalence was 16 (45.7%), and the least prevalence was 2 (5.7%), including Truncus arteriosus, double inlet left ventricle. **Conclusion:** As CHD is a significant cause of morbidity and mortality in children, Early access to medical aid and proper surgery is necessary to avoid morbidity and mortality and improve their quality of life.

INTRODUCTION

The prevalence of congenital heart disease (CHD) is nearly one-third of all major congenital anomalies.[1] Globally, 1.35 million newborns with CHD are born every year. A recent study reported the highest CHD birth prevalence of 9.3 per 1000 live births in Asia. 2.3 to 5 per 1000 CHD are reported in India.[2] These are primarily seen in neonates, infants, and children, but in our country, uncorrected CHD is also observed. The prevalence of CHD has dramatically increased in recent decades because of better diagnostic procedures, especially echocardiography. In India, a large number of births are conducted at home by unskilled health workers; hence, most CHDs are unnoticed and prone to risk factors due to CHD.[3]

The common causes of CHD are a multivitamin and folic acid-deficient diet during pregnancy, maternal diabetes, febrile illness, consanguinity, and systemic lupus enythematous (SLE) in the mother's bad obstetric history (including previous history of abortions and stillbirths). advanced paternal maternal age, and multiple drug intake.[4] Hence, an attempt is made to evaluate the cyanotic CHD and non-cynotic CHD in children of different age groups.

MATERIALS AND METHODS

70 (seventy) children aged between 1 month to 10 years visited the pediatric department of ESIC Medical College Hospital Kalaburgi (585102), Karnataka were studied.

Inclusive Criteria

Children diagnosed with congenital heart disease and with written consent given by their parents' or guardians for treatment were selected for study.

Exclusive Criteria

Children who have previously undergone cardiac surgery Children with other anomalies apart from the heart were excluded from the study.

Method: 2D Echocardiography and color Doppler was considered a definitive tool for the diagnosis of CHD congenital heart disease. Out of 75 patients, 35 (50%) had acynotic congenital heart disease (ACHD) and 35 (50%) had cyanotic congenial heart disease (CCHD). Various congenital anomalies were evaluated in both groups.

The duration of the study was from November 2002 to December 2023.

Statistical Analysis: Various acynotic congenital heart diseases and cyanotic congenital heart diseases were classified by percentage. The statistical analysis was carried out in SPSS software. The ratio of male and female children was 2:1.

RESULTS

[Table 1] Distribution of Acynotic Congenital Heart Disease: 19 (54.2%) ventricular septal defect (VSD), 9 (25.7%) arterial septal defect (ASD), 4 (11.4%) patent ductus arteriosus (PDA), 1 (2.85%) arterio-

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ventricular septal defect, 1 (2.85%) pulmonary stenosis, and 1 (2.85%) aortic stenosis.

[Table 2] Distribution of cyanotic congenital heart disease: 16 (45.7%) tetralogy of Fallot, 5 (14.2%) transportation of great arteries, 3 (8.57%) total anomalous primary venous connections, 2 (5.71%) truncus arteriosus, 2 (5.71%) double inlet left ventricle, 3 (8.57%) double inlet right ventricle, and 4 (11.4%) others.

Table 1: Distribution of Acynotic congenital heart disease

Acynotic congenital heart disease	No. of patients (35)	Percentage %
Ventricular Septal Defect	19	54.2
Arterial septal Defects	9	25.7
Patent Ductus arteriosus	4	11.4
Atrio-ventricular septal defects	1	2.85
Pulmonary stenosis	1	2.85
Aortic stenosis	1	2.85

Table 2: Distribution of Cynotic congenital heart disease

Cynotic congenital heart disease	No. of Patients (35)	Percentage (%)
Tetralogy of Fallot	16	45.7
Transposition of great arteries	5	14.2
Total anomalous pulmonary venous connections	3	8.57
Truncus arteriosus	2	5.71
Double inlet left ventricle	2	5.71
Double inlet right ventricle	3	8.57
Others	4	11.4

Table 3: Prevalence of CHD in India

Worker and year	Place	Percentage (%)
Hoffmann JIE, Samuel Kaplan (1962)	North India	31
Gupta S, Puri RK, Indira OC, Datta SP (1968)	South India	25.6
Bidwai PS, Mahajan CM, Walia BN, Berry JN. (1971)	Chandigarh	50.8
Verma KC, Chabbra P, Magotra M (1979)	J& K	19.7
Menache CC, du Plessis AJ, Wessel DL, Jonas RA, Newburger JW.(1980)	New Delhi	13.2
Saxena A (1993)	Agra	15.2
Khalil A. (1994)	New Delhi	13.9
Thakur JS, Negi PC, Ahluvalia SK, Sharma R, Bharadwaj R.(1995)	Shimla	12.25
Chadha SL, Singh N, Shukla DK (2001)	New Delhi	14.2
Present study (2023)	North Karnataka	70

The ratio of present study has increased due to usage of latest techniques and malnourished pregnant women

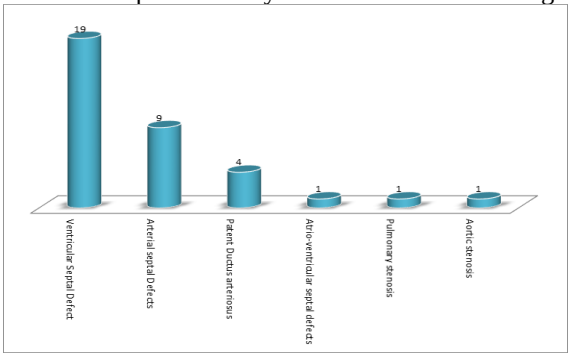

Figure 1: Distribution of Acynotic congenital heart disease

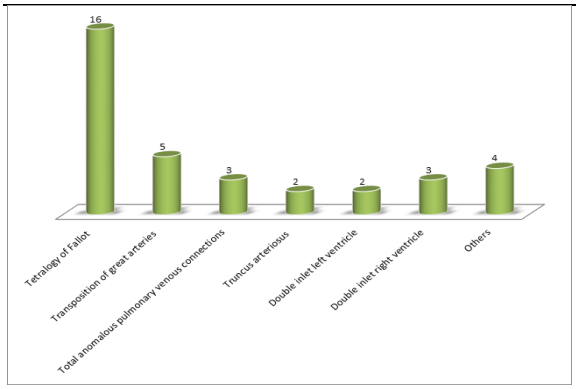

Figure 2: Distribution of Cynotic congenital heart disease

DISCUSSION

Present study of congenital heart disease in children of North Karnataka, The age range of one month to ten years was studied. In the distribution of acynotic CHD, 19 (54.2%) had a ventricular septal defect, 9 (25.7%) had an arterial septal defect, 4 (11.4%) had PDA, 1 (2.85%) had arterioventricular septal defects, 1 (2.85%) had pulmonary stenosis, and 1 (2.85%) had aortic stenosis [Table 1]. In the children with cyanotic CHF, 16 (45.7%) tetralogy of Fallot, 5 (14.2%) transportation of great arteries, 3 (8.57%) total anomalous pulmonary venous connections, 2 (5.71%) truncus arteriosus, 2 (5.71%) double inlet left ventricle, 3 (8.57%) double inlet right ventricle, and 4 (11.4%) others [Table 2]. These findings are more or less in agreement with previous studies.[5-7]

A cyanotic CHD is non-restrictive VSD valvular aortic pulmonary stenosis with gradients >25 mm Hg aorta (non-conduct dependent). The cyanotic CHD are hypoplastic left heart syndrome transposition complexes aortic arch interoretation univenticular heart, tetralogy of fallot. Tetralogy of fallot-like conditions associated with pulmonary stenosis or atresia, total anomalous venous connection, persistent truncus arteriosus, Ebsteins anomaly, etc.[8]

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It is reported that the etiology of CHD is genetic, environmental, or nutritional. It is also reported that CHD children are followed by stillbirths or miscarriages. Moreover, CHD is often found in siblings and relatives of patients with CHD.[9] Moreover, the incidence of consanguineous marriage is equally responsible for CHD. The majority of pregnant women do not get the ideal diet or nutrition during pregnancy, which will also often lead to CHD at birth or miscarriage.[10] Moreover, ill-health pregnant mothers do have CHD children. Above all, late marriages have increased the number of CHD children because sperm or ova might be inefficient to form a normal zygote. It could lead to CHD in children.[11]

It is also reported that the function or activity of genes entirely depends upon a balanced diet. If there is a lack of proper nutrition or diet, the genes lose their function, and they are called silenced genes. Hence, nutrition plays a vital role in preventing CHD.[12] It is a widely accepted and well-established fact that the majority of Indian women suffer from OCD (obsessive compulsion disorder). It will retard the growth of the fetus and may lead to CHD in children.

CONCLUSION

Present study: CHD in North Karnataka children, It is observed that advanced parental age, bad obstetric history, febrile illness during pregnancy, folic acid and multivitamin Iron deficient diet, diabetic mothers lead to CHD. Awareness is required to create in society the ideal age of marriage, nutritional status, and a proper and periodic medical check-up during pregnancy, which may reduce the prevalence of CHD.

Limitation of Study: Owing to tertiary location research centre, small number of patients and lack of latest technique we have limited findings and results.

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